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Moravian Coll., Bethlehem, Pa.

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Conducted over a 6 week period at Moravian College, Bethlehem, Pa., the object of this study was to discover if a particular combination or variation of motivational sources and of evaluative logic would provide a significantly superior method for teaching the visual arts. Based on the belief that college art education offers numerous opportunities for utilizing original thinking, developing skills and cultivating aesthetic sensitivities, this study investigated the effect of various inner-directed and outer-directed motivation and evaluation strategies upon the visual art work of non-art students. Visual and non-visual stimuli were used to produce drawings in and out of class. Forty-four subjects were assigned to 4 groups, Teacher Motivation-Teacher Evaluation; Teacher Motivation-Student Evaluation; Student Motivation-Teacher Evaluation; Student Motivation-Student Evaluation. The major conclusions are that (1) in terms of the environmental conditions and the criterion variables, significantly different scores are shown among the experimental groups, (2) in terms of the environmental conditions and the criterion variables, significantly different scores are shown among the experimental groups for specific periods of instruction, and (3) a significant difference is not found to exist between the four experimental treatments and the two levels of stimuli." (JS)

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U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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Rudy S. Ackerman

December 1967

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Moravian College

Bethlehem, Pennsylvania

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TABLE OF CONTENTS

	Page
Acknowledgments	ii
List of Tables.	vii
List of Figures	xvi
 I. INTRODUCTION.	 1
The Background of the Study	1
Statement of the Problem	3
Assumptions and Questions.	4
Statement of the Null-Hypotheses	5
Definition of Terms.	6
Limitations of the Study	8
Summary.	8
Review of Literature	9
Concepts of Motivation	9
Concepts of Evaluation	15
Judgment and Criteria.	20
Summary.	24
 II. PROCEDURES OF THE INVESTIGATION	 25
Population and Sample.	25
The Experimental Design.	25
Design of the Teaching Experiment.	25
Description of the Experimental Setting.	27
Treatment of the Four Experimental Groups.	30
Teacher Motivation (A-1).	30
Rationale	30
Student Motivation (A-2).	31
Rationale	32
Evaluative Treatments of the Study	32
Teacher Evaluation (B-1).	32
Rationale	32
Student Evaluation (B-2).	33
Photographs of the Student Drawings Used for the Expert Art Judges' Criteria	 33
The Major Categories Used in Relation to the Process and Product In and Out-of-Class	 34
In-Class Process.	34
In-Class Product.	34
Out-of-Class Product.	34

	Page
The Selection of the Expert Art Judges	35
External Judgments of the Expert Art Judges.	35
Instructions for Judging the Drawings.	35
Definition of the Evaluative Criteria.	36
Originality	36
Craftsmanship	36
Over-all Aesthetic Value.	36
III. ANALYSIS OF THE DATA AND FINDINGS	44
Introduction	44
Judged Agreement and the Intercorrelations of the	
Judged Criteria	44
Treatment of the Data	44
Statistical Analysis of the Data	44
Judge Reliability and Correlation	44
The Analysis of Variance Statistic	46
Analysis of Variance for In-Class Process on the	
Dependent Variable: Originality	47
Analysis of Variance for In-Class Process on the	
Dependent Variable: Craftsmanship	50
Analysis of Variance for In-Class Process on the	
Dependent Variable: Over-all Aesthetic Value.	53
Analysis of Variance for In-Class Process on the	
Dependent Variable: Total Variable Scores	53
Analysis of Variance for In-Class Product on the	
Dependent Variable: Originality	58
Analysis of Variance for In-Class Product on the	
Dependent Variable: Craftsmanship	58
Analysis of Variance for In-Class Product on the	
Dependent Variable: Over-all Aesthetic Value.	63
Analysis of Variance for In-Class Product on the	
Dependent Variable: Total Variable Scores	63
Analysis of Variance for Out-of-Class Product on	
the Dependent Variable: Originality	66
Analysis of Variance for Out-of-Class Product on	
the Dependent Variable: Craftsmanship	71
Analysis of Variance for Out-of-Class Product on	
the Dependent Variable: Over-all Aesthetic	
Value.	71
Analysis of Variance for Out-of-Class Product on	
the Dependent Variable: Total Variable Scores	76
Analysis of Variance for the Period to Period	
Dynamics of the In-Class Process on the	
Dependent Variable: Originality	76

	Page
Analysis of Variance for the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Craftsmanship	79
Analysis of Variance for the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Over-all Aesthetic Value.	80
Analysis of Variance for the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Total Variable Scores	81
Analysis of Variance for the Period to Period Dynamics of the In-Class Product on the Dependent Variable: Originality	82
Analysis of Variance for the Period to Period Dynamics of the In-Class Product on the Dependent Variable: Craftsmanship	83
Analysis of Variance for the Period to Period Dynamics of the In-Class Product on the Dependent Variable: Over-all Aesthetic Value.	85
Analysis of Variance for the Period to Period Dynamics of the In-Class Product on the Dependent Variable: Total Variable Scores	86
Analysis of Variance for the Period to Period Dynamics of the Out-of-Class Product on the Dependent Variable: Originality	86
Analysis of Variance for the Period to Period Dynamics of the Out-of-Class Product on the Dependent Variable: Craftsmanship	87
Analysis of Variance for the Period to Period Dynamics of the Out-of-Class Product on the Dependent Variable: Over-all Aesthetic Value.	88
Analysis of Variance for the Period to Period Dynamics of the Out-of-Class Product on the Dependent Variable: Total Variable Scores	89
 V. DISCUSSION.	 91
Introduction	91
Judge Reliability and Correlation.	91
The Relationship of the Source of Motivation and the Evaluative Locus to the Conditions of In-Class Process, In-Class Product and Out-of-Class Product	91
The Relationship of the Motivational Source and Evaluative Locus to the Period to Period Dynamics of Learning	93

	Page
The Relationship of the Source of Motivation and the Evaluative Locus to the Visual and Non- Visual Stimuli	94
Summary	95
V. CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS.	97
Conclusions	97
Implications of This Investigation for Art Education	99
Recommendations for Further Research.	101
VI. SUMMARY AND CONCLUSIONS.	103
Restatement of the Problem.	103
Summary of the Experimental Design and Procedure. .	103
Summary of the Evaluation of the Drawings	105
Summary of the Analysis of the Data	106
Consideration of the Null-Hypotheses.	106
Major Conclusions of the Investigation.	108
Implications of This Investigation for Art Education	110
Recommendations for Further Research.	113
BIBLIOGRAPHY	114
APPENDIX	121

LIST OF TABLES

Tables	Page
I Reliability Estimates for the Three Criteria as Judged by Five Trained Art Judges	45
II The Intercorrelation of the Three Criteria as Judged by Five Judges for the Teacher Experiment	46
III Analysis of Variance for the In-Class Process on the Dependent Variable: Originality.	48
IV Means of the In-Class Process Judgments on the Dependent Variable: Originality.	49
V Analysis of Variance for the In-Class Process on Judgments on the Dependent Variable: Craftsmanship	51
VI Means of the In-Class Process Judgments on the Dependent Variable: Craftsmanship.	52
VII Analysis of Variance for the In-Class Process on the Dependent Variable: Over-all Aesthetic Value .	54
VIII Means of the In-Class Process Judgments on the Dependent Variable: Over-all Aesthetic Value .	55
IX Analysis of Variance for the In-Class Process on the Dependent Variable: Total Variable Scores.	56
X Means of the In-Class Process Judgments on the Dependent Variable: Total Variable Scores. . .	57
XI Analysis of Variance for the In-Class Product on the Dependent Variable: Originality.	59
XII Means of the In-Class Product Judgments on the Dependent Variable: Originality.	60
XIII Analysis of Variance for the In-Class Product on the Dependent Variable: Craftsmanship.	61
XIV Means of the In-Class Product Judgments on the Dependent Variable: Craftsmanship.	62

Tables		Page
XV	Analysis of Variance for the In-Class Product on the Dependent Variable: Over-all Aesthetic Value.	64
XVI	Means of the In-Class Product Judgments on the Dependent Variable: Over-all Aesthetic Value.	65
XVII	Analysis of Variance for the In-Class Product on the Dependent Variable: Total Variable Scores	67
XVIII	Means of the In-Class Product Judgments on the Dependent Variable: Total Variable Scores . .	68
XIX	Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Originality. . . .	69
XX	Means of the Out-of-Class Product Judgments on the Dependent Variable: Originality	70
XXI	Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Craftsmanship. . .	72
XXII	Means of the Out-of-Class Product Judgments on the Dependent Variable: Craftsmanship	73
XXIII	Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Over-all Aesthetic Value.	74
XXIV	Means of the Out-of-Class Product Judgments on the Dependent Variable: Over-all Aesthetic Value.	75
XXV	Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Total Variable Scores	77
XXVI	Means of the Out-of-Class Product Judgments on the Dependent Variable: Total Variable Scores . .	78
XXVII	Means of the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Originality.	79
XXVIII	Means of the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Craftsmanship.	80

Tables	Page
XXIX Means of the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Over-all Aesthetic Value.	81
XXX Means of the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Total Variable Scores	82
XXXI Means of the Period to Period Dynamics of the In-Class Product on the Dependent Variable: Originality	83
XXXII Means of the Period to Period Dynamics of the In-Class Product on the Dependent Variable: Craftsmanship	84
XXXIII Means of the Period to Period Dynamics of the In-Class Product on the Dependent Variable: Over-all Aesthetic Value.	85
XXXIV Means of the Period to Period Dynamics of the In-Class Product on the Dependent Variable: Total Variable Scores	86
XXXV Means of the Period to Period Dynamics of the Out-of-Class Product on the Dependent Variable: Originality	87
XXXVI Means of the Period to Period Dynamics of the Out-of-Class Product on the Dependent Variable: Craftsmanship	88
XXXVII Means of the Period to Period Dynamics of the Out-of-Class Product on the Dependent Variable: Over-all Aesthetic Value.	89
XXXVIII Means of the Period to Period Dynamics of the Out-of-Class Product on the Dependent Variable: Total Variables Scores.	90
XXXIX Summary of the Results of the Three Analyses of Variance.	107
XL Symmetric Correlation Matrix of Judge Agreement and the Intercorrelation of the Judged Criteria . .	122

Tables	Page
XLI Analysis of Variance for the In-Class Process on the Dependent Variable: Originality	124
XLII Analysis of Variance for the In-Class Process on the Dependent Variable: Craftsmanship	125
XLIII Analysis of Variance for the In-Class Process on the Dependent Variable: Over-all Aesthetic Value	126
XLIV Analysis of Variance for the In-Class Process on the Dependent Variable: Total Variable Scores .	127
XLV Analysis of Variance for the In-Class Product on the Dependent Variable: Originality	128
XLVI Analysis of Variance for the In-Class Product on the Dependent Variable: Craftsmanship	129
XLVII Analysis of Variance for the In-Class Product on the Dependent Variable: Over-all Aesthetic Value	130
XLVIII Analysis of Variance for the In-Class Product on the Dependent Variable: Total Variable Scores .	131
XLIX Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Originality	132
L Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Craftsmanship	133
LI Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Over-all Aesthetic Value	134
LII Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Total Variable Scores .	135
LIII Analysis of Variance of the Total External Judged Scores for Period One (In-Class Process) Dependent Variable: Originality	148
LIV Analysis of Variance of the Total External Judged Scores for Period One (In-Class Process) Dependent Variable: Craftsmanship	148

Tables	Page
LV Analysis of Variance of the Total External Judged Scores for Period One (In-Class Process) Dependent Variable: Over-all Aesthetic Value. .	149
LVI Analysis of Variance of the Total External Judged Scores for Period Two (In-Class Process) Dependent Variable: Originality	149
LVII Analysis of Variance of the Total External Judged Scores for Period Two (In-Class Process) Dependent Variable: Craftsmanship	150
LVIII Analysis of Variance of the Total External Judged Scores for Period Two (In-Class Process) Dependent Variable: Over-all Aesthetic Value. .	150
LIX Analysis of Variance of the Total External Judged Scores for Period Three (In-Class Process) Dependent Variable: Originality	151
LX Analysis of Variance of the Total External Judged Scores for Period Three (In-Class Process) Dependent Variable: Craftsmanship	151
LXI Analysis of Variance of the Total External Judged Scores for Period Three (In-Class Process) Dependent Variable: Over-all Aesthetic Value. .	152
LXII Analysis of Variance of the Total External Judged Scores for Period Four (In-Class Process) Dependent Variable: Originality	152
LXIII Analysis of Variance of the Total External Judged Scores for Period Four (In-Class Process) Dependent Variable: Craftsmanship	153
LXIV Analysis of Variance of the Total External Judged Scores for Period Four (In-Class Process) Dependent Variable: Over-all Aesthetic Value. .	153
LXV Analysis of Variance of the Total External Judged Scores for Period Five (In-Class Process) Dependent Variable: Originality	154
LXVI Analysis of Variance of the Total External Judged Scores for Period Five (In-Class Process) Dependent Variable: Craftsmanship	154

Tables		Page
LXVII	Analysis of Variance of the Total External Judged Scores for Period Five (In-Class Process) Dependent Variable: Over-all Aesthetic Value. .	155
LXVIII	Analysis of Variance of the Total External Judged Scores for Period Six (In-Class Process) Dependent Variable: Originality	155
LXIX	Analysis of Variance of the Total External Judged Scores for Period Six (In-Class Process) Dependent Variable: Craftsmanship	156
LXX	Analysis of Variance of the Total External Judged Scores for Period Six (In-Class Process) Dependent Variable: Over-all Aesthetic Value. .	156
LXXI	Analysis of Variance of the Total External Judged Scores for Period One (In-Class Product) Dependent Variable: Originality	157
LXXII	Analysis of Variance of the Total External Judged Scores for Period One (In-Class Product) Dependent Variable: Craftsmanship	157
LXXIII	Analysis of Variance of the Total External Judged Scores for Period One (In-Class Product) Dependent Variable: Over-all Aesthetic Value. .	158
LXXIV	Analysis of Variance of the Total External Judged Scores for Period Two (In-Class Product) Dependent Variable: Originality	158
LXXV	Analysis of Variance of the Total External Judged Scores for Period Two (In-Class Product) Dependent Variable: Craftsmanship	159
LXXVI	Analysis of Variance of the Total External Judged Scores for Period Two (In-Class Product) Dependent Variable: Over-all Aesthetic Value. .	159
LXXVII	Analysis of Variance of the Total External Judged Scores for Period Three (In-Class Product) Dependent Variable: Originality	160

Tables	Page
LXXVIII Analysis of Variance of the Total External Judged Scores for Period Three (In-Class Product) Dependent Variable: Craftsmanship	160
LXXIX Analysis of Variance of the Total External Judged Scores for Period Three (In-Class Product) Dependent Variable: Over-all Aesthetic Value. .	161
LXXX Analysis of Variance of the Total External Judged Scores for Period Four (In-Class Product) Dependent Variable: Originality	161
LXXXI Analysis of Variance of the Total External Judged Scores for Period Four (In-Class Product) Dependent Variable: Craftsmanship	162
LXXXII Analysis of Variance of the Total External Judged Scores for Period Four (In-Class Product) Dependent Variable: Over-all Aesthetic Value. .	162
LXXXIII Analysis of Variance of the Total External Judged Scores for Period Five (In-Class Product) Dependent Variable: Originality	163
LXXXIV Analysis of Variance of the Total External Judged Scores for Period Five (In-Class Product) Dependent Variable: Craftsmanship	163
LXXXV Analysis of Variance of the Total External Judged Scores for Period Five (In-Class Product) Dependent Variable: Over-all Aesthetic Value. .	164
LXXXVI Analysis of Variance of the Total External Judged Scores for Period Six (In-Class Product) Dependent Variable: Originality	164
LXXXVII Analysis of Variance of the Total External Judged Scores for Period Six (In-Class Product) Dependent Variable: Craftsmanship	165
LXXXVIII Analysis of Variance of the Total External Judged Scores for Period Six (In-Class Product) Dependent Variable: Over-all Aesthetic Value. .	165

Tables		Page
LXXXIX	Analysis of Variance of the Total External Judged Scores for Period One (Out-of-Class Product) Dependent Variable: Originality	166
XC	Analysis of Variance of the Total External Judged Scores for Period One (Out-of-Class Product) Dependent Variable: Craftsmanship	166
XCI	Analysis of Variance of the Total External Judged Scores for Period One (Out-of-Class Product) Dependent Variable: Over-all Aesthetic Value.	167
XCII	Analysis of Variance of the Total External Judged Scores for Period Two (Out-of-Class Product) Dependent Variable: Originality	167
XCIII	Analysis of Variance of the Total External Judged Scores for Period Two (Out-of-Class Product) Dependent Variable: Craftsmanship	168
XCIV	Analysis of Variance of the Total External Judged Scores for Period Two (Out-of-Class Product) Dependent Variable: Over-all Aesthetic Value.	168
XCV	Analysis of Variance of the Total External Judged Scores for Period Three (Out-of-Class Product) Dependent Variable: Originality	169
XCVI	Analysis of Variance of the Total External Judged Scores for Period Three (Out-of-Class Product) Dependent Variable: Craftsmanship	169
XCVII	Analysis of Variance of the Total External Judged Scores for Period Three (Out-of-Class Product) Dependent Variable: Over-all Aesthetic Value.	170
XCVIII	Analysis of Variance of the Total External Judged Scores for Period Four (Out-of-Class Product) Dependent Variable: Originality	170
XCIX	Analysis of Variance of the Total External Judged Scores for Period Four (Out-of-Class Product) Dependent Variable: Craftsmanship	171

Tables	Page
C Analysis of Variance of the Total External Judged Scores for Period Four (Out-of-Class Product) Dependent Variable: Over-all Aesthetic Value. .	171
CI Analysis of Variance of the Total External Judged Scores for Period Five (Out-of-Class Product) Dependent Variable: Originality	172
CII Analysis of Variance of the Total External Judged Scores for Period Five (Out-of-Class Product) Dependent Variable: Craftsmanship	172
CIII Analysis of Variance of the Total External Judged Scores for Period Five (Out-of-Class Product) Dependent Variable: Over-all Aesthetic Value. .	173
CIV Analysis of Variance of the Total External Judged Scores for Period Six (Out-of-Class Product) Dependent Variable: Originality	173
CV Analysis of Variance of the Total External Judged Scores for Period Six (Out-of-Class Product) Dependent Variable: Craftsmanship	174
CVI Analysis of Variance of the Total External Judged Scores for Period Six (Out-of-Class Product) Dependent Variable: Over-all Aesthetic Value. .	174

LIST OF FIGURES

Figure		Page
1	A Paradigm for Teaching the Visual Arts	2
2	Design of the Teaching Experiment	26
3	Model of the Teaching Experiment.	27
4	A Diagram of the Teaching Treatments, the Experimental Conditions and the Judgment Variables	28
5	Still-life Used for the Experiment.	29
6	The Classroom Setting	29
7	Process Judgments Scored Low for the Dependent Variables: Originality, Craftsmanship, and Over- all Aesthetic Value	38
8	Process Judgments Scored Average for the Dependent Variables: Originality, Craftsmanship and Over- all Aesthetic Value	39
9	Process Judgments Scored High for the Dependent Variables: Originality, Craftsmanship and Over- all Aesthetic Value	40
10	Product Judgments for the Dependent Variable: Originality.	41
11	Product Judgments for the Dependent Variable: Craftsmanship	42
12	Product Judgments for the Dependent Variable: Over- all Aesthetic Value	43
13	Judged Scores of the Four Teaching Treatments for the Six Periods of In-Class Process on the Dependent Variable: Originality.	136
14	Judged Scores of the Four Teaching Treatments for the Six Periods of In-Class Process on the Dependent Variable: Craftsmanship.	137

Figure		Page
15	Judged Scores of the Four Teaching Treatments for the Six Periods of In-Class Process on the Dependent Variable: Over-all Aesthetic Value .	138
16	Judged Scores of the Four Teaching Treatments for the Six Periods of In-Class Process on the Dependent Variable: Total Variable Scores. . .	139
17	Judged Scores of the Four Teaching Treatments for the Six Periods of In-Class Product on the Dependent Variable: Originality.	140
18	Judged Scores of the Four Teaching Treatments for the Six Periods of In-Class Product on the Dependent Variable: Craftsmanship.	141
19	Judged Scores of the Four Teaching Treatments for the Six Periods of In-Class Product on the Dependent Variable: Over-all Aesthetic Value .	142
20	Judged Scores of the Four Teaching Treatments for the Six Periods of In-Class Product on the Dependent Variable: Total Variable Scores. . .	143
21	Judged Scores of the Four Teaching Treatments for the Six Periods of Out-of-Class Product on the Dependent Variable: Originality.	144
22	Judged Scores of the Four Teaching Treatments for the Six Periods of Out-of-Class Product on the Dependent Variable: Craftsmanship.	145
23	Judged Scores of the Four Teaching Treatments for the Six Periods of Out-of-Class Product on the Dependent Variable: Over-all Aesthetic Value .	146
24	Judged Scores of the Four Teaching Treatments for the Six Periods of Out-of-Class Product on the Dependent Variable: Total Variable Scores. . .	147

CHAPTER I

INTRODUCTION

The Background of the Study

Teaching by its very nature is an art, however, it is capable of being analyzed, investigated and examined by empirical means as a social science. Empirical studies in art education on all levels of teaching have been increasing, and as a result, additional material related to motivation and evaluation is being made available to researchers.

An insufficient number of studies related to the inner-directed and outer-directed relationship of motivation and evaluation seem to have been conducted and/or reported. This lack of continuity in the examination of the total learning experience appears to have left a philosophic and theoretic gap, and although many theories and philosophic insights are repeatedly offered to educators in the field, a comprehensive theory in the teaching and learning of the visual arts is non-existent. Jerome Hausman (27) and Vincent Lanier (34), although reporting a wide range of research studies in art education, demonstrate the apparent lack.

As a result of a pilot study by Ackerman (1), a theoretical construct was developed that demonstrated, through statistical analysis, art methodologies and teaching strategies that were superior to others. Theoretical considerations growing out of this previous work seem to indicate that a high correlation exists between whether the teacher or the student plays a leading role in the motivation and/or the evaluation. Thus, a polarity of teaching methodologies was developed which provided related and antithetical art teaching strategies frequently employed within the confines of the contemporary art classroom.

The findings of the pilot study by Ackerman (1), led to the construction of a paradigm which attempts to explain what may be the most effective relationship between motivation and evaluation.

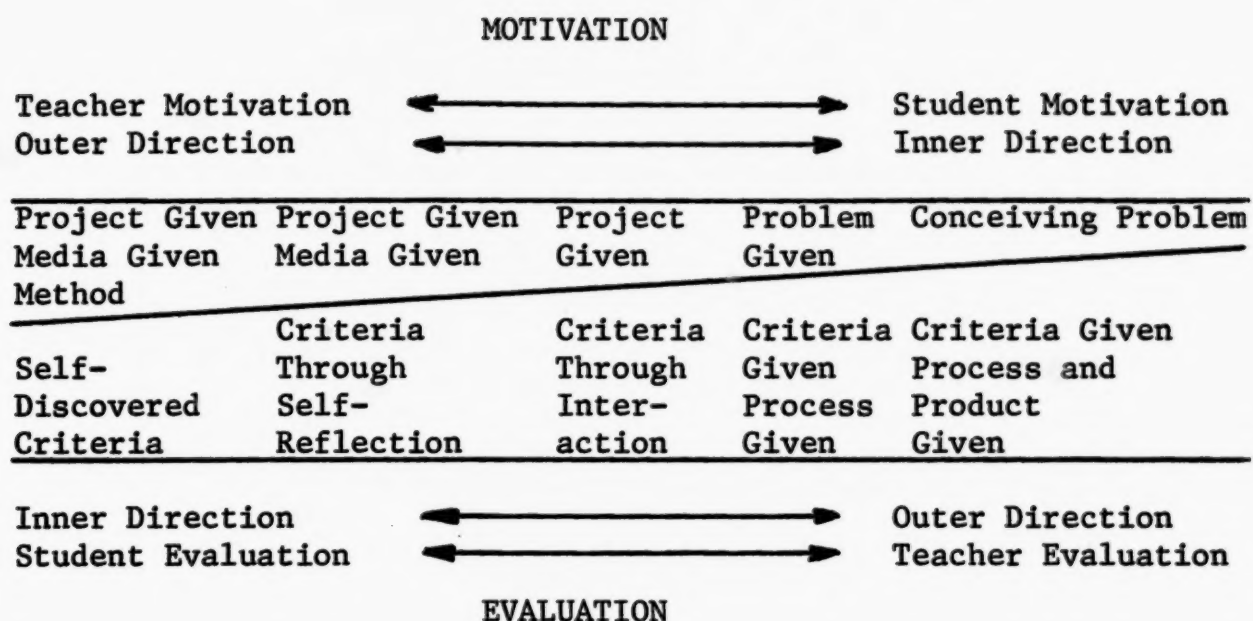


FIGURE 1

A PARADIGM FOR TEACHING THE VISUAL ARTS*

The concept of inner-directed and outer-directed motivation has been widely documented and published. A few of these studies deserve mention at this time.

In 1961, Elliot W. Eisner (18) developed a paradigm for the teaching of the visual arts which demonstrated a clearer understanding of inner-directed motivation (student motivation) and outer-directed motivation (teacher motivation). These findings provided the basic structure on which the motivational aspects of this study were built.

Eisner's paradigm illustrates how six levels of motivation in which imposed conditions (outer-directed) operate within a given learning situation in an inverse ratio to the opportunities the student has for choice and cue formation. The greater the outer-directed motivation, the less chance for cue formation by the learner. The greater the inner-directed motivation, the greater is the opportunity for cue formation.

This paradigm has provided valuable insights into the complex interplay of the various inner-directed and outer-directed

*The motivational aspects of this paradigm were developed by Elliot Eisner (18).

motivational sources. The range of the motivational source theoretically provides a climate in which the student may be inhibited by the limitations of the experience as defined by the teacher or another climate in which the ultimate opportunity for inner-direction is possible; thus enabling the learner to experience "the sheer struggle and joy of achieving their solutions." This latter climate Eisner refers to as "the apex of educational inquiry."

Carl Rogers (48), by using client centered non-directive counseling, has provided educational researchers with valuable data from which they have been able to structure experiments related to the self-directive experiences of learners. The concept of "openness to awareness" in which the creative student performs from an "extensional orientation" has played a large part in the development of contemporary educational methodology.

Research conducted by Kenneth Beittel (6:119) has added considerable depth to the understanding of the learner as a self-governing and self-corrective system. In a study which sought to determine the effect of self-reflective thinking in art on the capacity for creative action, Beittel states that ". . . differences in self-reflective conditions and teacher functions within the experiments themselves do cause significant differences in art quality, strategy complex, and variables in the creative personal domain." This information seems to correlate quite closely with the findings of Rogers (48) who has reported that the most fundamental condition of creativity is the "internal locus of evaluation."

Perhaps one of the greatest influence on contemporary research in art education has been that of Viktor Lowenfeld (37). His vanguard experimentation and theorizing in the areas of motivation, evaluation and personality development are of great value. Concepts of self-identification, self-expression related to one's needs and the psychological implications of the self-image have served as a foundation for much of the work now being pursued in art education.

Statement of the Problem

The objective of this study was to discover if a particular combination or variation of motivational sources and of evaluative loci would provide a significantly superior strategy for teaching the visual arts. Based on the belief that art education offers numerous opportunities for college students to utilize original thinking, develop craftsmanship, and cultivate aesthetic

sensitivities, this study investigated the effect the various inner-directed and outer-directed motivation and evaluation strategies had on the visual art work of non-art college students. Additional dimensions of this study were to examine the work completed in the art classroom and, also, work completed outside of the experimental setting. The effect of visual and non-visual stimuli was another area of this investigation.

When considering the lack of empirical research in which the interrelationship of the motivational source and evaluative locus of art teaching have been examined, the need for the development of this type of data becomes quite apparent. Through an examination of the teaching-learning process within the framework of a controlled classroom environment, new answers and insights were sought from which theoretical constructs could be developed. These findings may serve as guides for more effective teaching of visual arts in the classroom and at the same time make a modest contribution to the development of teaching-learning theory.

Assumptions and Questions

One of the first assumptions one can make about motivation and evaluation is that they mean many things to many people. Motivation, for example, may be imposed from an outer-direction (the teacher) with the didactic teacher representing one extreme. The motivation, on the other hand, may be inner-directed as in the case of the learner-oriented teacher. Evaluation is another area in which teachers and students function within a wide range of extremes. Teacher-oriented criteria represents an evaluation from an outer-direction while the teacher who requires the student to develop self-discovered criteria represents the other end of the spectrum, inner-direction.

Since we know that teachers of all subject areas seem to use a wide spectrum of inner-direction and outer-direction in motivation and evaluation, the following questions were raised.

1. Does a certain combination of motivation (teacher or student directed) and evaluation (teacher or student directed) provide a significantly superior teaching treatment as measured in terms of originality, craftsmanship and over-all aesthetic value?
2. Is there a significantly measurable difference between teacher directed motivation and student directed motivation? Is one method of motivation superior to the other?

3. Is there a significantly measurable difference between teacher directed evaluation and student directed evaluation? Is one method of evaluation superior to the other?
4. Will the nature of the stimuli, whether they are visual or non-visual, be a significant factor in the quality of student drawings?
5. What effect will certain combinations of motivation (teacher and student directed) and evaluation (teacher and student directed) have on the process and products of drawings completed in and out of the classroom?

Statement of the Null-Hypotheses

The principal questions which this study attempted to answer are stated in the following null-hypotheses:

Hypothesis 1

There will be no significant difference in the total scores for originality, craftsmanship and over-all aesthetic value among the experimental groups in relation to:

- A. In-Class Process
- B. In-Class Product
- C. Out-of-Class Product

Hypothesis 2

There will be no significant difference in the total scores for originality, craftsmanship and over-all aesthetic value among the four experimental groups for a specific period of instruction under the conditions of:

- A. In-Class Process
- B. In-Class Product
- C. Out-of-Class Product

Hypothesis 3

There will be no significant difference in the total scores for originality, craftsmanship and over-all aesthetic value among the experimental groups when either visual or non-visual stimuli are used.

Definition of Terms

The following terms are presented as they are used in the presentation of data within this study.

Teacher Motivation (A-1) represents one of the independent variables used in this study. Under this treatment, the student received (a) the project assignment (either visual or non-visual), (b) a limited supply of materials including: ink, charcoal, felt pens and water color brushes, (c) a demonstration of the use of each of the media presented for use. This teaching strategy is also referred to as outer-directed motivation.

Student Motivation (A-2) represents another independent variable. Under this teaching strategy, the student received a minimal amount of teacher direction. A week previous to each lesson the students were asked to bring either visual or non-visual material to the art class. At the beginning of each experimental session, the student organized his material and developed three two-dimensional drawings. The students were encouraged to bring their own materials and to use any of a large variety of materials available in the art classroom. No instruction was offered in the use of the art material. This teaching strategy is also referred to as inner-directed motivation.

Teacher Evaluation (B-1) represents another of the independent variables. Within the framework of this treatment, the student was given the criteria on which his work was evaluated after each session (originality, craftsmanship and over-all aesthetic value). The teacher evaluation was given after each session through the use of black and white Polaroid reproductions of student process and product class work, plus one photograph of the work that had been done out-of-class during the previous week. This amounted to eight photographs per session. The evaluation was teacher directed in that the student was not required to comment or verbalize during this evaluation session. This evaluative strategy was also referred to as outer-directed evaluation.

Student Evaluation (B-2) represents the second independent variable of evaluation. Within the framework of this treatment, the student was encouraged to develop his own criteria of evaluation, and to express his feelings about his work in writing after each session. This evaluation was student directed in that the teacher made no evaluation of the student's work. This evaluative strategy is also referred to as inner-directed evaluation.

Originality (dependent variable) was one of the criteria for teacher evaluation and the external judgments of the expert art judges. As guideposts for evaluation, inventiveness and imagination were thought to be important.

Craftsmanship (dependent variable) represents another criterion for teacher evaluation and the external judgment by expert art judges. Technical control and mastery of the medium were considered in the evaluation of this variable.

Over-all Aesthetic Value (dependent variable) represents the third evaluative criterion used for teacher evaluation and the external judgment by the expert art judges. Each picture was evaluated in terms of how it would place in an art contest. The question was asked: Would the picture place high, middle or low? A rating scale, which will be explained in the next chapter, was used for all the expert art judges' evaluations.

In-Class Process is defined as the development of the first project of each of the six sessions. Four photographs were taken at five minute intervals as the work progressed. This represents three process stages and the finished product drawings for each session. Criteria judgments of the photographs were made by the expert art judges at the end of the research study.

In-Class Product represents the finished products completed during the art class. Three drawings were completed during each session over the six week period for a total of eighteen. Each of the photographs was evaluated by the expert art judges at the end of the research study.

Out-of-Class Product represent products completed outside of class. Each student was asked to complete one drawing a week out of class. A photograph was taken each week for a total of six. These pictures were used by the expert art judges at the conclusion of the research study.

External Judgments refers to the type of judgments that are typically used in judging works of art. All student work that was judged was randomized so that sessions, subjects and treatments were unrelated. The expert art judges individually evaluated the student's works in terms of the criteria. Teacher and student evaluations were not made in terms of grades or scores. Only the expert art judges recorded scores. These scores were used as the basis from which all the computations of this study were made.

Design of the Experiment shows the sources of motivation, the loci of evaluation, the stimuli and the period to period dynamics factors. (See page 26, Figure 2).

Period Dynamics refers to the comparison of the mean scores of the individual periods of instruction under the experimental teaching treatments.

Limitations of the Study

One of the limitations of this study was related to the experimental structure of the independent variables for motivation and evaluation. In an effort to structure a learning experiment in which the teaching method of the motivational source and the evaluative locus would remain constant, strict guidelines of teacher and student interaction were considered necessary for factors (A), motivation, and (B), evaluation. However, within the limitations of this experimental setting, every effort was made to maintain the atmosphere of a studio-classroom experience.

Another limitation was related to the population and sample used in this study. Since the sample of 44 students was taken from a population of 150 students who attend a small liberal arts college (1200), the findings of this study should be considered in terms of the population represented and cannot be given universal application.

Summary

This investigation represents an extension of the background of literature and research studies presented in this chapter. The basic issue, which was at the very heart of this investigation, was whether various combinations of the source of motivation and the evaluative locus could provide the foundation on which more effective methodologies in art education could be structured.

Manuel Barkan, having written on some of the basic issues related to this study, has presented a challenge for contemporary art educators and art education when he states:

What is lacking in sufficient degree is an adequate syntactical structure - a strategy which holds in continuous focus the relationships between ends and means, purpose and procedure, for learning experiences. Here, I believe lies a clue to some of the difficulties

and weaknesses in the energetic efforts to create a body of systematic and appropriate research in art education. We have not learned yet how to analyze the value questions adequately in terms of ends and outcomes of teaching in art in order to truly group the procedural problems which pertain to the formulation and control of conditions for learning in art. In short, we have not yet learned the strategy of holding in tension the philosophical and experimental dimension involved in the subject matter of the learning experience in art. (4:8)

Review of Literature

There seems to be little doubt that educational methodology, since the "progressive era" of American education, has become increasingly more pupil-centered and inquiry-oriented. This phenomenon seems to be directly related to at least three causes: (1) the strong impact of the philosophy of John Dewey and the "Progressive Movement"; (2) the development of the Thorndike school of educational psychology which demonstrated that "reward" fostered educational gains more effectively than punishment; (3) the political climate of the world since the 1930's which has been characterized by the confrontation of totalitarianism and democratic systems of government.

As a culmination of the forces that influenced American education, educators now see classrooms as what Thelen (56:139) calls ". . . an extremely complex, shifting web of interpersonal relationships." This points up the importance of having learners study in an atmosphere of self-directive participation. Major emphasis in theoretical, philosophic and empirical research has been to demonstrate the value of creating a supportive atmosphere in which learners can become emotionally and intellectually involved.

The research and literature that is related to this study will be presented under three major sections (1) Concepts of Motivation, (2) Concepts of Evaluation and (3) Judgment and Its Criteria.

Concepts of Motivation

Literature and research related to inner-directed and outer-directed classroom instruction seems to be quite plentiful, particularly since the 1930's.

Some of the basic concepts of contemporary understanding of motivation are captured in this statement by Earl E. Kelley: (30:6)

Learning leads to more learning, and the human organism is infinitely curious. The human being will seek knowledge if left to his own purposes, and the building of new knowings into his own experiences will lead him on to other activities.

Kelley and Rasey (31:113), in describing the dynamic of growth, explain that the role of the teacher is to provide freedom of growth rather than to restrict it (as is often the case). They also suggest: (31:142)

Since learning is growth and has to be done by the learner in light of all his uniqueness, the area of teaching method becomes one of doing things to the circumstances under which the learner tries to learn, rather than doing things to the individual . . . method involves arrangements and conditions, not the forceful making over of people in our own previously held images.

E. L. Thorndike, in the development of the "law of effect" offered to teachers a very practical suggestion: "If you want someone to learn something, wait until he does it and then reward him." (9:59) Thorndike was the first leading psychologist to include "knowledge of results" as a reward. The impact of reward psychology has been, to a large degree, to make learning a function of pleasant student-teacher relations. Thorndike's (57) famous book The Fundamentals of Learning did much to bring about the permissiveness that became a hallmark of the "progressive era."

J. P. Guilford (35:39) has identified two types of thinking that seem to play a strong role in the development of a greater understanding of inner-directed and outer-directed motivation. "Convergent thinking" is described as being useful in situations where (1) the problem is given, (2) where there is a standard method of solving problems and (3) where a solution to the problem can be guaranteed within a finite number of steps. The second type of thinking, "divergent thinking," tends to take place when the problem has yet to be discovered and when there is no set way of solving it. Convergent thinking implies a single right solution, whereas divergent thinking may produce a range of appropriate solutions. The work of Guilford has provided many insights into the role of the teacher in creative art teaching.

The work and writings of Abraham H. Maslow (39) suggests that a creative and highly self-motivated group of individuals exists; he refers to them as "self-actualizing people." One of the characteristics of this unique group is that they are dependent for their own development and continued growth on their own potentialities and latent resources. Maslow (39:208) states further that:

. . . self-actualizing people can all be described as relatively spontaneous in behavior. His behavior is marked by simplicity and naturalness, and by the lack of artificiality or straining of effort.

Sidney J. Parnes (44:190) in examining creative and non-creative problem solvers discovered that the source of motivation (inner or outer) plays a very important part in the way learners react to problems. Another dimension of motivation is also related to the nature of rewards. He states:

The non-creative problem-solver gets an idea, sees it as a possible solution to this problem, and settles for it without further ado. The creative problem-solver is not satisfied with his first idea . . . the creative person forgoes the immediate reward of applying his first idea, in expectation of a better solution (greater reward) ultimately.

Related to the theories of Maslow and Parnes are the conclusions of E. Paul Torrance (58). The work of Torrance in creativity is well known, however, some of the concepts related to motivation which have been an outgrowth of his previous work may not be. One of the concepts related to highly creative persons appears to be their "exceptional starting ability." The conclusions of Torrance indicate that more emphasis should be placed on learning how to learn, in other words, the development of inquiry and problem-solving. He fully expressed this feeling when he stated: (58:42)

If you give credit for development of original ideas and for self-initiated learning, they [the students] will develop original ideas and engage in self-initiated learning.

The research of Robert C. Burkhardt (12) has dramatically shown that "deliberate" students, as opposed to "spontaneous" constitute the majority of youngsters with whom the public school and college teacher must deal. Some of the personality

characteristics of this group are that they tend to be "concrete, literal, emotionally non-committed, ideationally closed and security-oriented." He concludes:

Their relationship to the teacher and their peers is essentially adaptive, non-interactive, and often other-directed.

In an earlier study, in which he worked with high school students in a student motivated classroom climate, Burkhart (11) found that achievement in quality of work seemed to be related to how successfully students were able to identify with their work. The need for methods of teaching that will enable students to identify with their environment, their teachers and their work is an extremely important, and often overlooked, element necessary for meaningful learning.

Karl Ashenbrennen (3:149), in discussing the role of the creative teaching-learning atmosphere, believes that schooling must promote a kind of readiness for lifelong self-education. If we accept the principles he offers, we soon realize that schooling for creativity is no longer addicted to "ingrained activitistic modes of thought about the arts and the artists," but rather transcends these areas and offers opportunities for development in all areas of education.

The work of Withall (63), in which he suggests that teacher behavior can be measured, has developed a "climate index" that classifies all teacher verbalization into seven categories. A description of the social-emotional climate in the classroom can be made on the basis of the pattern of verbalization which emerges. This scale is a continuum ranging from learner-centered to teacher-centered responses. The "index" is useful in gaining an understanding of the wide range of teacher verbal behavior that can influence the climate in the classroom. Both Kelley (30), and Withall highly advocate cooperation and a learner-centered atmosphere as the best type of environment in which to facilitate the greatest amount of learning.

In discussing the atmosphere which is conducive to the development of creativity and sensitive awareness, Frank Wachowiak and Theodore Ramsay (61:25) state that:

. . . the wise teacher allows the child to work independently until he sees that the child is in need of more challenge and more fuel. Only then does the teacher step in to go a little further, to move toward a new level of

artistic growth. The good teacher uses different motivational approaches for different children. To do this sensitively and intellectually, he must have a diverse and comprehensive background in the arts and in child development.

Two environments described by Harold H. Anderson (2) seem to identify a polarity of differences in the climate of the classroom. The first climate is known as environmental facilitating. Under this treatment, the student knows that he is free to choose and produce his own contribution without threat, censure or guilt from his environment. The "open system" is acceptant and supportive. In the use of this system intense, invigorating stimulation through the confronting and free interplay of differences must be used. The opposite environmental climate is known as environmental restricting. In this setting, the teacher determines the material, method and the project. When the "closed system" is used, the student's personality is threatened and power is used over the individual to think for him, make decisions for him and require conformity in his behavior.

In a research study which utilized Lowenfeld's (37) seven factors of growth, Lawrence F. McVitty (42) found that a strong motivation, in which the teacher and student become personally involved with each other, proved to be significantly higher than when the teacher did not verbally interact with the students. These findings seem to correlate with R. W. White's (62:308) concept of "competence motivation." He suggests that the leading motive in the growth of children is not the satisfaction of any drive, but rather the effective interaction that they have with the environment.

As the literature seems to indicate, we live in a world that requires self-starting, self-directing citizens who are capable of independent action. Arthur W. Combs (14:373) points out some of the pitfalls of many current teaching practices.

Preoccupation with right answers; insistence upon conformity; cookbook approaches to learning; over concern for rules and regulations; preoccupations with materials and things instead of people; the solitary approach to learning; the delusion that mistakes are sinful; emphasis on memory rather than learning; emphasis on grades rather than understanding and content details rather than principles.

Combs suggests a few ways to remedy these poor practices. The first is the need by teachers to believe that self-direction is important. The second is the need for trust in the "Human Organism." The third need is for teachers to assume the experimental attitude (stop being afraid to make mistakes). The fourth need is for teachers to realize the tremendous opportunity they have been given to expand human experience.

E. Paul Torrance (59:496), as a result of recent research, has re-emphasized that students learn best when given a chance to learn in ways best suited to their motivations and abilities. Whenever teachers change their ways of teaching in significant ways, a different group of learners become the stars and high achievers.

. . . many critics have equated creative ways of learning with progressive education, permissiveness and lack of discipline. A careful examination of the methods and materials that have been developed and evaluated reveals that such a conclusion is grossly in error.

Torrance (59:353) maintains that teachers will be more successful in motivating children - arousing, sustaining, and directing their behavior - if they carry out the motivation within the framework of what he refers to as the "responsive environment."

What I have in mind calls for the most alert and sensitive kind of direction and stimulation. It means building an atmosphere of gracious and receptive listening; relieving the fears of the timid and over-taught and overstimulated; fending off negative criticism and making the learner aware of what is good; stirring the sluggish and deepening the shallow; making sure that every sincere effort to learn brings enough satisfaction to keep the learner willing to try again; and keeping alive the zest and excitement of learning.

Kenneth Lansing (35:74), in a study which was conducted on the fifth grade level, discovered the importance of the acceptant classroom atmosphere that Torrance has described. As a result of his work he stated that:

. . . if the teacher creates a wholesome climate, the art is better. In fact, it is possible that the effect of the classroom teacher is so great that it overcomes any effect that might be produced by class size, room size, or pupil-art teacher contact.

The importance of a wholesome class climate was brought out in a unique study conducted by Robert Patton (45:43) with 155 eleventh grade and 131 twelfth grade students. The students in this study were asked to indicate which characteristics of their teachers were the most motivating and which were the most non-motivating. The findings of this study indicated that students were motivated most by "a sense of humor" and the fact that a teacher was "dedicated to his career." The qualities students objected to most were that the teacher was "boring," "unfair grader," "overly strict" and "no sense of humor." For the most part, this study showed the extremely important role that classroom atmosphere played as to whether the student was motivated or not.

Herbert J. Burgart (10:73), in explaining the relationship between stimulus and motivation, seems to have provided a focal point which can serve as a summation for the bulk of the literature and research studies referred to in this chapter.

. . . the teacher's role is that of providing an appropriate stimulus. On the other hand, only the child himself can provide the motivation. The stimulus is that externalized thing which assists the process while the motivation is internalized and must come from the child. It is impossible to motivate anyone or anything, but it is absolutely necessary to stimulate or bring to consciousness a specific direction to become meaningful as a learning process.

Concepts of Evaluation

While studies and literature related to motivation have been quite frequent over the past few decades, studies concerned with evaluation have only emerged in greater frequency in the last decade. Again, as was noted with motivation, educators have not been able to present any all inclusive theory of evaluation. However, much research reported indicates that significant differences do appear in relation to inner-directed and outer-directed evaluation.

The basic problem that seems to face both the teacher and the learner when studying art is that the very nature of the subject tends to have an essentially non-rational quality that opens onto a singularly unique image of reality. Irving Kaufman (28:19) has described this "image of reality" as:

. . . a way of knowing that, thought not even absolute, provides a rich, rewarding appreciation of the nature of things, events and relationships. It achieves this end through its own flexible internal organization which differs markedly from those of science, history, or other genuine disciplines in that there are no canons of correctness, no categorically right or wrong methods, only those which prove of value for particular individuals at given times.

This seems to indicate that teachers must become sensitive to the fact that art exists in terms of itself. The value that art has for the learner is then related to the degree he can interact with the making and recognition of aesthetic form.

It appears that evaluation in art is closely tied to the individuals sense of personal identity. This may be roughly equated with the reality assumptions the learner has about himself, and his assessment of what he is really like. James Coleman (13) has stated that as a person gains a clearer sense of self-identification, he begins to evaluate himself on various levels. This concept is closely related to the "self-concept" of Lowenfeld (37).

Coleman (13:67) outlines the process of learning and the importance of the "self-concept" when he states:

The typical pattern of adjustment behavior in the human organism involves perceiving the situation; processing all the information received from inner and outer sources-evaluating its significance, integrating it with previous knowledge, deciding what course of action that seems best suited to meeting the requirements of the situation. All these processes take place with reference to the individual's perception of himself as an active and responsible agent with conscious intent-as a doer with the capacity for self-direction.

The importance of the "self-concept" is that as the individual begins to express himself as a unique entity capable of self-direction, his self-stimulus becomes his "operational center" - the center which screens and interprets incoming information, gives their meaning, and coordinates, integrates and evaluates the individual activity. As learners are encouraged to develop self-direction, opportunities for self-criticism are greatly enhanced; the student is then given the challenge of gaining a sense of personal responsibility.

As a result of utilizing the workshop approach to learning, Kelley (30:103) has developed insights into the process of evaluation that illustrates how the evaluations in life may be quite different from those of the classroom.

Evaluation is the process through which we assume attitudes toward what we meet and what we do. In life, it is continuous and automatic. Too often in school it occurs only at examination time, and then it is more of a guessing game between the teacher and learner than genuine evaluation.

Another insight is gained into the meaning of evaluation when J. P. Guilford (25) refers to "evaluation abilities" as the ability for the learner to recognize that things are wrong and that they can be improved. Without such an awareness creative thinking could never be started; hence one can see the tremendous need to develop these "evaluation abilities" in learners of all ages and in all facets of education.

Rogers (47) adds another important concept to those of Guilford and Coleman when he describes the learner as being in the center of continually changing world of experience. He describes this as the phenomenal or experiential field. Thus, a very small portion of the private world is consciously experienced. The meaning that each person gains from this field seems to be related to how each individual can evaluate and understand himself. The world of experience is for each individual a very private world.

From a psychological frame of reference, Anderson (2) has described evaluation of creating in three different ways. The first type is from an external locus. In the locus the teacher has the power over the innovator of learner. This power may be real, potential or symbolic. The net result is the ultimate achievement of conformity by the individual to external standards. The creating person is denied the opportunity and right to be himself.

Where the locus of evaluation is internal, the learner or creator has every opportunity to be himself. In this treatment there is no intentional use of power over him. Hence, creativity is at a maximum. The third type of evaluation, that Anderson has described, is called mutual, dyadic or participating. This evaluation offer the maximum of interplay of true perceptions, of communication, of understanding, of spontaneity, and of harmony between the teacher and the student. This evaluation is vigorous, mutually stimulating and is known as being creative relating.

This is probably the most effective of the three types of evaluation.

An important concept that Burgart (10:7) presents is that the child, before he is capable of logical rationalization, is capable of visual expression. He continues:

Since the visual art process draws entirely from the individual's present or past experience, with self, environment or inter-personal relationship he is continually confronting himself, necessitating re-evaluation. He, therefore, controls to some degree his immediate direction making possible choices which he feels meaningful or worthwhile. Here the child may develop at his own rate, express otherwise non-discussive needs, establish his own personal value structure, enjoy the freedom of search and discovery inherent in the creative process and still related to a meaningful identity. In short, the child is meaningful and totally involved with his own education.

Parnes (44) has reported a study that was conducted at the University of Buffalo using deferred judgment. On one problem students concurrently applied evaluations as they tried to think up ideas. On the second problem, the students operated on the idea of deferred judgment and deliberately postponed judgment. Thus, the students were able to utilize self-reflective thinking and improve their work.

Calvin Taylor (55) suggests that methods designed to increase self-reflectiveness in art will bring about greater progress in art (on a variety of criterion products judged for quality and spontaneity) and cause concurrent gains on related general creativity, creative personality, and self-rating measures.

Taylor (55:393) defines four dimensions of depth in learning, these are (1) "Continuity in productivity." This requires at least a dozen works in a single medium. Within the framework the learner has many opportunities for self-knowledge and self-evaluation; (2) "Self-evaluation of art products." This stage is a natural outgrowth of "continuity." This dimension leads to an energizing force of self-activity in evaluating and encourages depth in commitment. (3) "Divergent tasks." In this dimension, the learner experiences perceptual, formal, and ideational shifts. Self-discovery of changed orientation is most effective; (4) "Process self-evaluation." Here the learner conceptualizes the self in action through constructing a process strategy plan.

This method symbolizes flexibility and intuitive thought and aids in transfer.

The work of Beittel has added considerable weight to the prevailing concept of the importance of self-evaluation for learners. As a result of his work done in evaluation and self-reflective thinking, Beittel (7:275) reported that:

Contingent on depth or circumscribed continuity in art experiences is the opportunity it provides for evaluation on the part of the learner, since he can meaningfully compare his work over time and becomes concerned with change, good setting, or improvement.

Beittel, through his study, demonstrated that when the student worked in a student-evaluation treatment his performances improved whether a "depth" or "breadth" curriculum was used.

Major goals of education tend to emphasize the development of individuals who are self-directed, who are critical learners, and who are capable of making intelligent choices. James W. Hughes (28) points up the need for helping students develop an adaptive approach to problem solving in order to accomplish these goals. In other words, procedures must be developed that will focus more attention upon the learner so he may be able to attain the necessary skills to achieve such goals. Henry J. Duel (17) suggests that students are able to develop insights and the ability to evaluate themselves and their potentialities. He claims that the first step of this process must be that of developing the skills of self-evaluation in each child.

In a study in which "structured" and "unstructured" methods of instruction were used, Bernard Schwartz (49) reported that students who evaluated themselves from a descriptive check list produced superior work in quality. The work of Burkhart (12) which compared teacher centered vs. student centered evaluation demonstrated that student centered evaluation represented a superior treatment.

The idea that students will be better able to develop creative art experiences in an atmosphere of freedom and acceptance appears to be a well established concept. The hallmark of this type of classroom is giving the student the feeling that he is wanted, loved and understood.

Lawrence S. Kubie (33:133) may have been able to summarize the depth to which self-evaluation reaches into the life of each learner.

Without self-knowledge in depth we can have dreams, but no art. We can have the neurotic raw material of literature, but not mature literature. We can have no adults, but only aging children who are armed with words and paint and clay and atomic weapons, none of which they understand.

Judgment and Criteria

One of the outstanding features of empirical research since the end of World War II has been the great amount of emphasis given to judgments in the art work of learners. The impetus for most of this research found its genesis in the work of psychologists who were interested in examining the various facets of creativity. They were closely followed by art educators who investigated creative art work in terms of process and product judgments and/or working strategies.

Conrad Fiedler (20:54), who was very concerned about judgments of the visual arts, represented a rebellion against the Hegelian thought of his day. His concepts of judgment may well have lead the way for the formation of our contemporary approaches of evaluation for the visual arts. The idea of what a work of art represents is expressed when he states:

A work of art is not the sum total of the creativity of the individual, but a fragmentary expression of something that cannot be totally expressed.

Another theoretical concept that developed was stated by Albrecht Dürer (20:63) in the early 16th century.

The art of painting cannot be well judged except by those who are themselves good painters; but truly, for other persons, it is concealed as a foreign language is hidden from you.

The idea of communication with the work being judged seems to be very useful when one considers the task of rendering large numbers of independent judgments as is required in many contemporary research projects.

Fiedler (20:70) offers another suggestion that may be of use when considering the attitude judges should assume when making judgments.

He who will judge man's achievements must in a certain sense be indifferent to them; but not in the sense that his emotions takes no part at all in these achievements, for also that which man intends to appropriate mentally he must grasp passionately.

In a paper read before the British Psychological Society in 1939, H. J. Eysenck (19:100) stated that evidence was found for a general objective factor of visual aesthetic appreciation which was independent of teaching, tradition, and other irrelevant associations. As applied to persons, this factor could be considered the core of reality behind what is generally called good taste. He suggested that the taste of a person could be measured by forming a correlation of persons scores and then checking the goodness of the test by correlating the scores of many tests. The relative "beauty" of a picture was calculated by averaging scores given by subjects. This concept has been used in making judgments for aesthetics with varying degrees of success in a few fairly recent empirical research studies.

In an experiment to discover if laymen and experts in art could identify excellence in painting, Donald A. Gordon (23:338) devised a coding system that enabled each criticism to be reduced to its essential meaning. A five point scale for excellence was used to judge student work. The results of this study indicated that the determinates of excellence found were color, form, composition, texture, shading and lighting, technique in general style, conception, mood and content.

Kenneth Lansing (35) reported that one of the basic problems of multiple criteria of judgments of art is that they are only semantically distinct from each other. Functionally, they have shown high intercorrelation and yielded essentially the same result as an over-all (Gestalt) judgment. The work of Donald Gordon (23) represents factor-analytic approaches to arrive at a simplified structure of judging criteria in the form of individual dimensions. This approach represents a new dimension for solving the problems of identifying multiple criteria.

A concern among psychologists, art educators and researchers in general has been the effect that individual differences in art judges has upon the judgments they make. Research related to these questions has been frequently reported since the early 1950's. In a study that probed into this area, Harold G. McCurdy (41:377) reported that individual preference orders are common and persisted, probably from an early age, and that they usually differ from person to person. However, when they are combined (total judgments) they yield distinct group orders. He also states:

. . . the basic fact is the individual preference order, and that explanation of this order is to be sought in the individual personality rather than in the stimulus conditions or in the concensus of the group. Through the materials used in experimental studies are often far removed in complexity and importance from true works of art, these conclusions very likely apply to acts of judgment which are aesthetic in the strictest meaning of the word.

Studies which have investigated into greater depth personality factors, as they relate to creativity, have been quite numerous in recent years. A few of them will be mentioned here as the more outstanding factor analytic studies.

J. P. Guilford (26), along with associates, has successfully investigated the process and product aspects of creativity. Gough (24), Stein and Meer (52), Barron (5) and Drevdahl (16) have all examined personality factors relevant to creative efforts. For the most part, these studies have indicated that an independence or self-assertive factor is characteristic of creative individuals.

Earl Linderman (36) compared art and non-art groups to determine whether personality differences play a significant part in art judgments. His findings indicated that they unquestionably do. This research demonstrated that differences existed in terms of personality characteristics as they relate to the judged preference of art works. Linderman suggests that a great need of contemporary art education is for the developing of individuals who will be sensitive to their respective problems, and will confront such judging situations they encounter with a maximum of personal creativeness, and with as few biases as possible. Linderman's work has demonstrated that aesthetic judgment and personal preferences are highly correlated particularly in judges experienced in the arts.

Another important concept of judging for creativity is stated by Morris I. Stein: (51:217)

Creativity consists of processes that occur within the individual. In general, one tends to judge the creativity of others in terms of the "products" they have produced. Such an orientation causes us to overlook the fact that creativity is a process. It is a process of hypothesis formation, hypothesis testing, and the communication of results.

Gloria Bernheim (8) has pointed up some of the advantages of using art work for judged criteria in research projects in art education. Among these advantages is the fact that the researcher in art education has a great deal of experience with art processes and art products. On the other hand, art educators usually have very little experience in the development of "intelligence" tests or questionnaires designed to investigate social relationships. Another important advantage of using art work is that the researcher can investigate the process of creation at any point as well as when the product is finished.

Some of the studies that have demonstrated the use of product and/or process evaluations have provided many insights into the effective use of various methodologies which greatly enhance the teaching of art education.

Edward Mattil (40) conducted a study to test the effectiveness of the "breadth" and the "depth" approaches to the teaching of art. This study demonstrated that judgments of progress were the most difficult to make. However, product judgments of aesthetics and spontaneity were defined, judged and shown to be significantly related.

J. W. Getzels (22) in a study was able to examine the process of discovery in three dimensions: (1) originality, (2) craftsmanship and (3) over-all aesthetic value. He found that judge agreement was highly correlated and that the dimensions of judgment were very useful. This system of judging was used in this research project and will be explained in the next chapter.

A recent study by Leon Frankston (21) has demonstrated that significant gains can be measured by the use of judged criteria. Thus, in his study that compared the effects of two art programs (self-developed and prescribed), significant judged differences were identified.

Dr. Zilbourg (50:25), a New York psychiatrist, has described the psychology of the creative person as:

. . . a person who walks around in life, who looks, and sees, and feels, who takes into account what life is and, somehow or other, wants to get out from the fetters in order to express something he has within himself.

When one considers the implications of developing meaningful judgments in art, and the many advances that have been made in this direction over the past decade, we begin to see how much work

remains to be done in the development of criteria that will adequately supply the researcher with the type of judgments his work requires.

Summary

Kahlil Gibran (31:90) once wrote that the teacher is wise who does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind. The richness of the literature and research material available to the contemporary researcher gives ample evidence of how theoretically and empirically these truths have been demonstrated. If educators wish to be "wise" teachers, they must enrich our teaching methodologies with the wealth of literature and research material that is now available. This review of related writings and research in Art Education and other disciplines represents the very foundation upon which this study was structured.

CHAPTER II

PROCEDURES OF THE INVESTIGATION

This chapter presents a description of the various methods employed in the gathering of the data: the population and sample, the experimental and teaching design, and the judging instructions for the expert art judges.

Population and Sample

This experiment was conducted over a six week period during the 1966-67 school year at Moravian College, Bethlehem, Pennsylvania. The population sample was randomly selected from a larger student population (150) who had elected studio art courses available in the curriculum. None of the selected students had ever previously taken an art course that was offered by the college. The investigator served as the teacher for the four experimental teaching groups.

The total sample consisted of 44 subjects (34 Male-10 Female): six freshmen, nine sophomores, thirteen juniors and sixteen seniors. All of the subjects attended each session and provided all the data necessary for analysis. The subjects were randomly assigned to four groups that represented the treatment conditions. By assigning 11 subjects to each group, the experimental design was balanced.

The Experimental Design

Figure 2, page 26, represents the design of the major experiment of this study, giving factor names and subclass N's. This design has three factors with two treatment levels each. The fourth factor has six levels. Factor A represents the motivational source and factor B represents the evaluative locus. The stimulus factor is C and has two levels. Factor D represents the six periods of the investigation.

Design of the Teaching Experiment

Figure 3 is a design that represents the motivational and evaluation treatments and direction. This is a two factor design with four groups. Subclass N's are indicated.

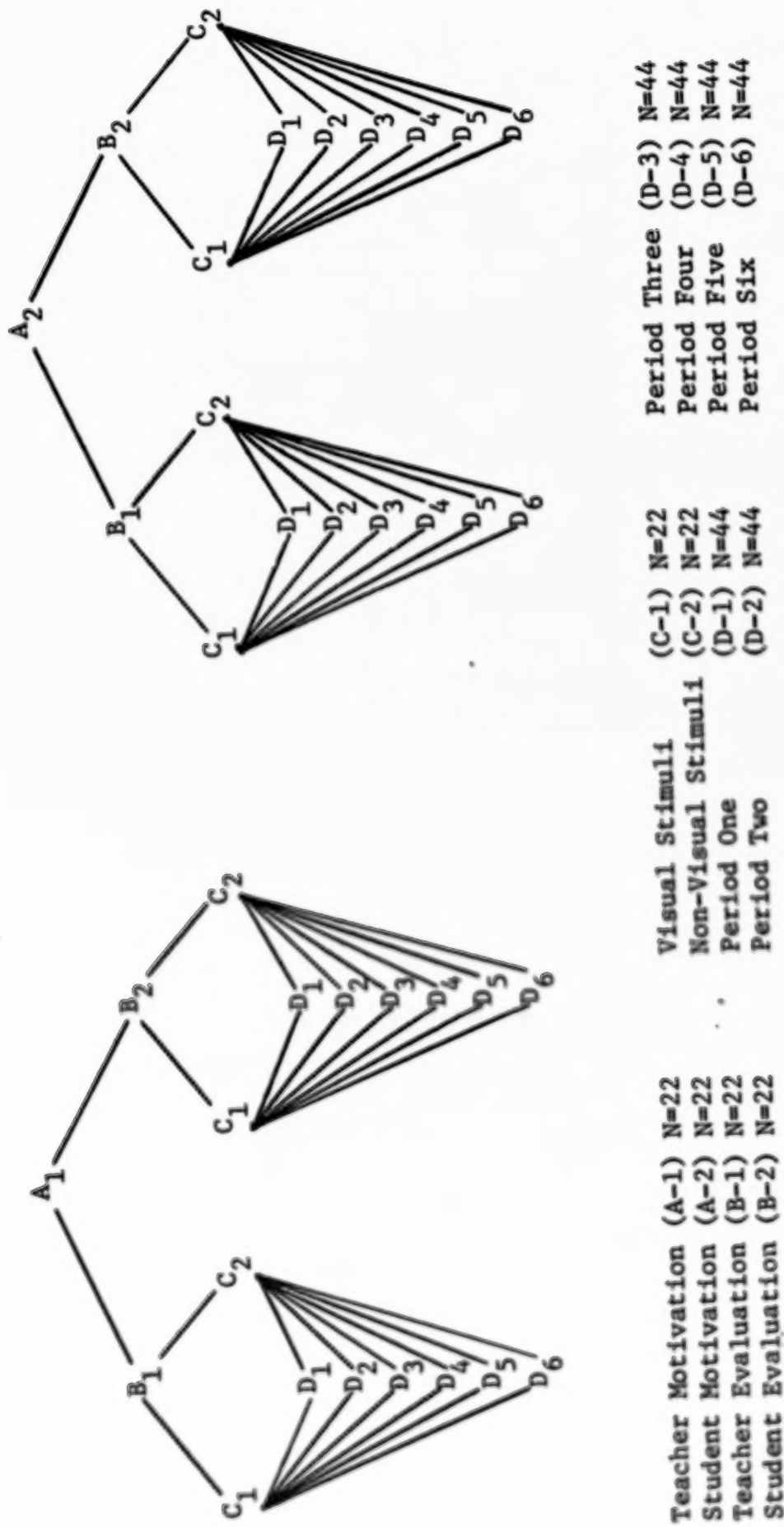


FIGURE 2

DESIGN OF THE TEACHING EXPERIMENT

Motivational Source

Evaluative Locus	Teacher	Student
	Teacher	Student
Teacher	GROUP I N=11 $A_1 B_1$	GROUP III N=11 $A_2 A_1$
Student	GROUP II N=11 $A_1 B_2$	GROUP IV N=11 $A_2 B_2$

N=44

- (A-1, B-1) Teacher Motivation and Teacher Evaluation, N=11
- (A-1, B-2) Teacher Motivation and Student Evaluation, N=11
- (A-2, B-1) Student Motivation and Teacher Evaluation, N=11
- (A-2, B-2) Student Motivation and Student Evaluation, N=11

FIGURE 3

MODEL OF THE TEACHING EXPERIMENT

Description of the Experimental Setting

The teaching experiment was conducted in a large, well lighted art studio. The subjects in each session were seated at desks that were arranged in a large circle. Each subject had a 3' x 4' work area and was encouraged to move to any table at which he would feel comfortable. Students were also permitted to move the tables about the room.

The students who cooperated in this study understood that they were a part of an experimental environment and pursued their tasks in a serious manner. No grades were given either for individual work or for the total six week session. The only characteristic which changed with each group was whether the motivation and/or evaluation was inner-directed or outer-directed.

Since the independent variables represented two levels of motivation and evaluation, the methodological atmosphere between the experimental groups differed considerably. These differences, and their effect on the classroom procedures, will be explained later under the title: Treatment of the Four Experimental Groups.

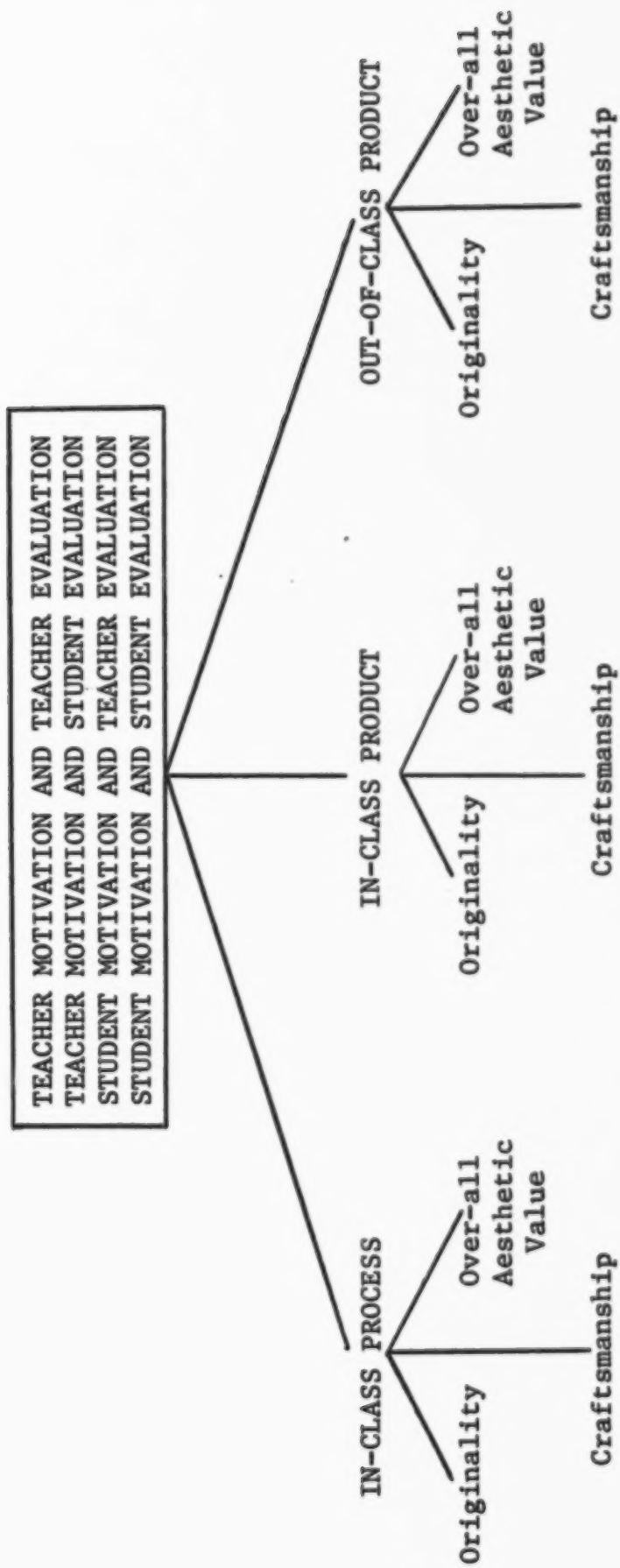


FIGURE 4

A DIAGRAM OF THE TEACHING EXPERIMENT, THE EXPERIMENTAL
CONDITIONS AND THE JUDGMENT VARIABLES



FIGURE 5

STILL-LIFE USED FOR THE EXPERIMENT

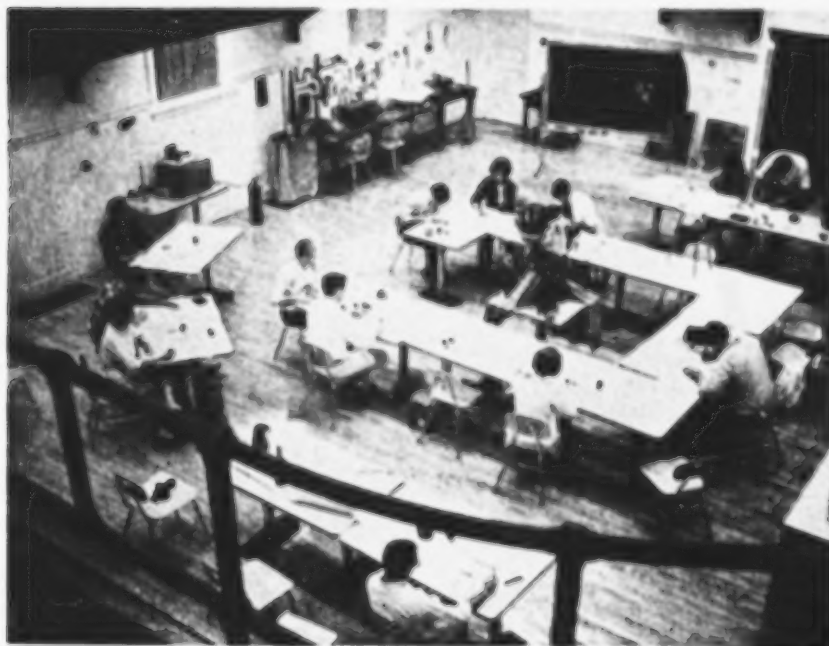


FIGURE 6

THE CLASSROOM SETTING

However, there were procedures that did remain constant and did apply equally to the four groups of the experiment. Some of these constant procedures were as follows.

Each of the four groups met for 90 minutes each, once a week (same day and time) over a six week period. During each session, the students were asked to complete three drawings for a total of 18 for the six week period. Each student spent approximately 20 to 25 minutes developing each drawing. The investigator served as the teacher for each group.

Treatment of the Four Experimental Groups

Teacher Motivation (A-1)

Factor A, level 1, (A-1) was the motivational treatment which was teacher-directed or outer-directed. Under this treatment, the student was given the (1) stimulus, (2) material, and (3) general instruction in the use of the materials.

The stimulus for the first, third and fifth week was visual in nature. This visual stimulus was a complex still-life which contained a part of a chair, a tricycle, a cotton fabric, an umbrella, a vine, a piece of bark, a picture frame, a bottle, a milkweed stalk, a peach basket, corn, and a bull's horn. The students were encouraged to consider the whole or parts of the still-life from any direction they wished.

On the second, fourth and sixth weeks of the study, a non-visual stimulus was provided. This stimulus was a poem which the students were given the first week of the study. During the second, fourth and sixth meeting, each student was asked to make three drawings of mental images he had of the poem "Night Fear" by Gordon Parks (43).

The materials of this motivational treatment were limited to felt pens, India ink, bamboo pens, and bristle brushes. Water containers were available for those who wished to use washes. A brief demonstration of these materials was given before each session. These demonstrations were related solely to the technical possibilities of the materials.

Rationale

In a pilot study that was conducted by the author (1), it was demonstrated that students who were motivated by the teacher

and self-evaluated scored significantly higher scores than any other combination of motivational and evaluative treatment. This pilot study was primarily concerned with over-all achievement in the learning experiment. However, the significance of the relationship of the motivational source and the evaluative locus may be different when one considers the gains made between studio sessions over a period of time. Since the teacher motivation method of this study tended to hold the student within a limited framework of themes and materials, the effects of the "depth" Mattil, (40) approach of instruction were anticipated. The paradigm of Eisner (18), referred to earlier, pointed to "the need for imposed conditions" as well as opportunities "for choice and cue formation." A question of prime importance was related to the type of evaluative locus that would be linked with this motivational treatment. This interplay between the "imposed conditions" of motivational treatment and evaluations in which student cue formation is possible or where evaluative criteria is imposed from the outside, it was hoped, would answer questions about the inter-relationship of motivation and evaluation.

Student Motivation (A-2)

Factor A, level 2 (A-2) represents a motivational treatment that was directly opposite of (A-1). This treatment was student motivation or inner-directed. Under this treatment, the student had to supply his own stimulus, bring to or find his own materials to discover their technical possibilities.

The first, third and fifth sessions were visual in nature. Each student was asked to bring in a group of objects he wanted to draw. For those who did not bring in any objects, various objects about the studio were found. The students set up their still-lives and then began to draw a wide variety of materials.

On the second, fourth and sixth sessions, the students were asked to be ready with an idea that they were exposed to as a result of reading a book or poem. This required each student to develop a mental image and portray it in his drawing. Obviously, the student worked from a non-visual stimulus of his own choosing.

The materials for this group were pencils, charcoal, ink pens, felt pens, brushes, water color paint, water pans, conte crayons, graphite pencils, bamboo pens and pastels. These objects were conveniently placed around the room and the students were encouraged to use them. The students were also encouraged to bring their own art materials. No introduction or demonstration was

given by the teacher in the use of any material, being that they were selected at random by the students.

Rationale

As the chapter of related literature and research in this study has indicated, contemporary educators have almost unitedly suggested that broader limits and a greater degree of self-direction should be extended to learners. Within the limitations of this study, treatment A-2, student motivation, provided this type of learning atmosphere. The primary questions that arose were related to the linking of this motivational treatment to the outer-directed and inner-directed motivations, and the possibility that superior strategies of teaching methodologies would be demonstrated.

Evaluative Treatments of the Study

Teacher Evaluation (B-1)

Factor B, level 1 (B-1) represented the evaluative treatment which was teacher evaluation or outer-directed. Under this treatment, the student's work was given a critique by the teacher at the end of each of the six sessions. These evaluative sessions were conducted in private on an individual basis with each student. The comments of the teacher were based on the work that was done or turned in at each session. This consisted of eight Polaroid photographs which included In-Class Process and In-Class Product work and one Out-of-Class Product photograph. The judgments of the teacher were based on his assessment of originality, craftsmanship and over-all aesthetic value in terms of his unstated criteria.

The student was not required to comment or express any feelings about his work. In other words, a dialogue between the teacher and student did not take place in the evaluation; the teacher was didactic in nature. Grades and process records were not used to indicate progress. The evaluations of the teacher were verbal in nature.

Rationale

Recent research by Beittel (6) has demonstrated that self-reflective evaluation is an important element in learning, however, questions that may need answering are also related to

teacher-directed evaluations. These questions needed investigating particularly since this method appears to have been (and possibly still is) the most common form of evaluation in contemporary teaching.

Student Evaluation (B-2)

Factor B, level 2 (B-2) was the evaluative treatment that involved student evaluation or inner-directed. Under this treatment, the student was asked to evaluate his own work. These evaluations were written on the reverse side of all the work accomplished in and out-of-class. All of the student evaluations were handed in one week after they were drawn: four evaluations per week. The drawings made under this treatment were all photographed. These photographs were mounted by the end of each studio session. The students had access to the photographs to help them in making their evaluations. No grades were given, either by the student or the teacher, the students evaluations were self-reflective in nature and grew out of criteria that the student developed. The judgment ranged from statements such as: "I do not like it" to some rather articulate statements about the elements of design and aesthetic considerations. The teacher made no comment about the student drawings or the evaluations the students made of themselves. The teacher, however, encouraged each student to approach his evaluative task in a serious and introspective way.

Rationale

As has been mentioned before, more recent empirical studies and theoretical constructs have illustrated the value of the "internal locus" and "self-reflective" evaluation in learning.

The linking of this treatment with inner-directed and outer-directed motivational treatments was the primary concern of this study. The question of the over-all judged quality of the drawings and period to period gains between groups also added a most useful dimension. This will be explained in the next chapter.

Photographs of the Student Drawings Used for the Expert Art Judges' Criteria

Photographs were taken of all the student work that was completed both in and out-of-class by a trained assistant. When photographs were taken while the students were drawing, each photograph required a 2 to 3 second interruption. Most of the

photographs were taken after the drawings had been completed so that the interruption of the student was not necessary. To insure a uniformity of composition and clarity, the photographs were taken from a metal tripod with a self-focusing Polaroid camera under constant light conditions. The camera was placed directly over the works.

Immediately after each photograph was taken, it was mounted on a 12" x 18" white panel. On the reverse side of this panel, the student's name, code number and session number were written. The left side of the panel had 15 tabs on which the expert art judges recorded their judgments for the dependent variables: originality, craftsmanship and over-all aesthetic value. The expert art judges at no time during the judging session had any access to the names of the students or the judgment scores of the other judges.

The Major Categories Used in Relation to the Process and Product In and Out-of-Class

The drawings that were made in the classroom were grouped into two major categories: (1) In-Class Process and (2) In-Class Product. A third group of drawings was made outside of the classroom and were called Out-of-Class Product.

1. In-Class Process. Students in each group, as has been stated earlier, were asked to draw three pictures in class each week. Each session process photographs were taken at five minute intervals of the first of the three drawings. This provided three process photographs and the finished product. These four Polaroid pictures were mounted on a coded panel, which was described earlier, and served as the pictures from which the expert art judges made their judgments. The criteria that the judges used in making their judgments will be explained later in this chapter.

2. In-Class Product. Each session, each student completed three drawings. These drawings were photographed and mounted on a 12" x 18" panel. Thus, the expert art judges could readily see the finished product that had been completed during one particular session. Each photograph was individually evaluated by the expert art judges.

3. Out-of-Class Product. Each week every student was asked to complete one drawing outside of the classroom. At the following session, the student handed in this finished drawing. These drawings were photographed, mounted and coded. They served

as the material from which the expert art judges made their external judgments.

These three major categories, although they were not considered factors in this investigation, serve as independent variables which explain the various environmental conditions of the teaching experiment that were explained.

The Selection of the Expert Art Judges

A team of five expert art judges from the Bethlehem, Pennsylvania area, using three criteria, made all of the judgments in this investigation. This team consisted of individuals who were professionally engaged in art teaching. Two of the judges were members of the local public high school faculty. The third judge was a junior high school art teacher. The fourth and fifth judges were elementary art consultants. The professional background of each judge represented a wide range of experience and each member has a master's degree in art education. All of the judges are also active participants in the visual arts.

External Judgments of the Expert Art Judges

After the teacher evaluations (B-1) and student evaluation (B-2) were concluded during the teaching-learning part of this study (six sessions), the judging by the expert art judges was conducted. The work of the four treatment groups was randomized and separated into the three major groups: In-Class Process, In-Class Product and Out-of-Class Product. Each group consisted of 264 panels which were judged at three different sessions for a total of 792 panels.

The judging sessions were conducted in a quiet, industrious atmosphere in a large, well lighted cafeteria. The panels were placed on large table tops and were readily visible. Each judge walked from table to table and viewed all of the photographs of the drawings. The judges worked for approximately three hours at each of the three judging sessions for a total of nine hours. Each judge made a total of 4752 individual judgments. The grand total of all the judgments in this investigation was 23,760.

Instructions for Judging the Drawings

A training session for the judges was conducted prior to the first judging session. The judges were instructed to:

1. start judging the products of the students in terms of one predetermined criterion of the three used (originality, craftsmanship and over-all aesthetic value). After they finished the first criteria judgment, they were instructed to go on to the second. Upon completion of the second judgment, they were instructed to complete the third.
2. record all of the judgments at the proper place on the panel. All judgments were based on the following evaluative scale:
 - 2 points - very poor
 - 3 points - poor
 - 4 points - below average
 - 5 points - average
 - 6 points - above average
 - 7 points - good
 - 8 points - outstanding
 - 9 points - excellent
3. rate all the work in each judgment session with the other work in the room. All work was judged from excellent (9 points) to very poor (2 points) in terms of the total work represented. All of the work represented at each session was examined before any judgments were made.

Definition of the Evaluative Criteria

The definitions used in this investigation were developed and successfully used in previous work conducted by Getzels (22).

1. Originality - The criteria of this dimension are related to the degree of inventiveness and imagination evident in his work. This judgment should be made regardless of the craftsmanship displayed.
2. Craftsmanship - The criteria for this dimension related to the degree of technical control and mastery the student has over his materials. This judgment should be made regardless of the amount of originality the student expressed.
3. Over-all Aesthetic Value - The criteria for this dimension related to the over-all gestalt judgments

that the judge "sensed" from a standpoint of his own experience. This was based on the question: (How would you rate this drawing if we were going to give art prizes in a show?).

At the conclusion of the judgment sessions by the expert art judges, all of the data were compiled, prepared on a master data sheet, and statistically analyzed by the investigator. The findings of this analysis of the data are discussed in Chapter III.

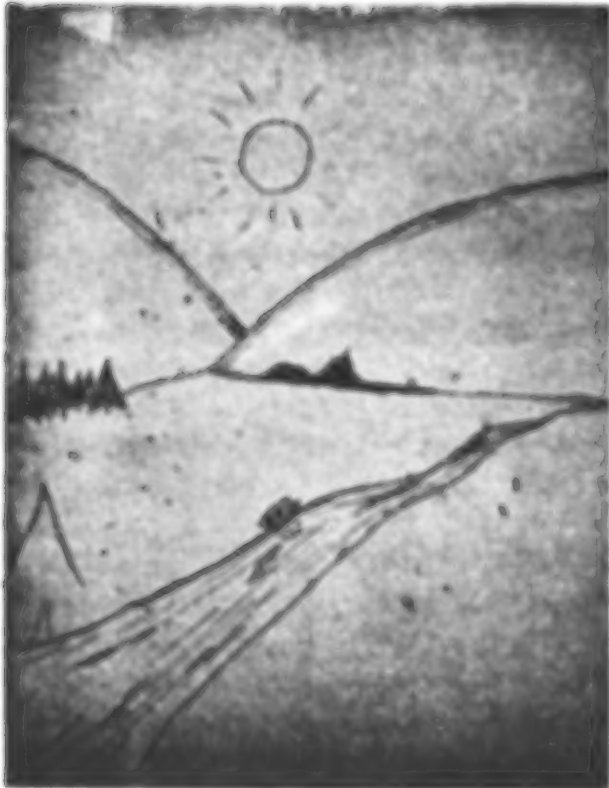
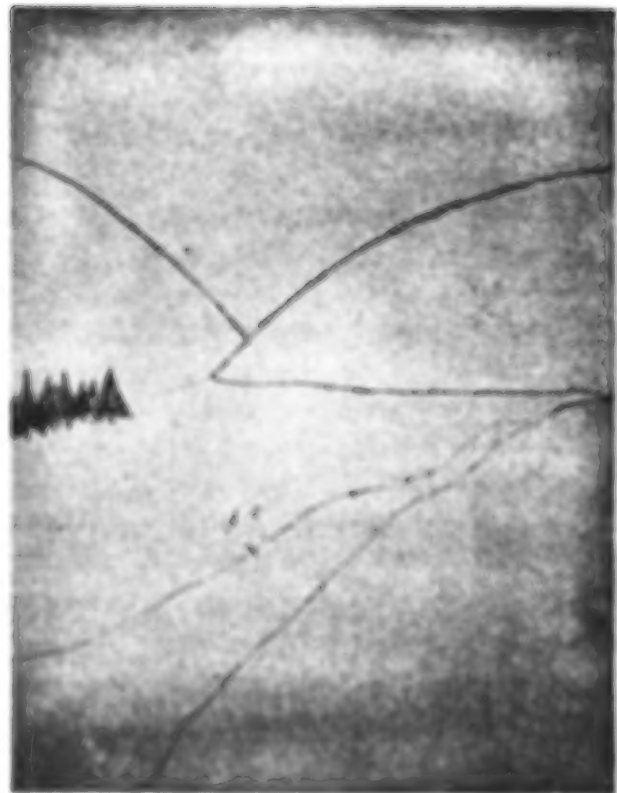


FIGURE 7

PROCESS JUDGMENTS SCORED LOW FOR THE DEPENDENT VARIABLE:
ORIGINALITY, CRAFTSMANSHIP AND OVER-ALL AESTHETIC VALUE



FIGURE 8

PROCESS JUDGMENTS SCORED AVERAGE FOR THE DEPENDENT VARIABLE:
ORIGINALITY, CRAFTSMANSHIP AND OVER-ALL AESTHETIC VALUE

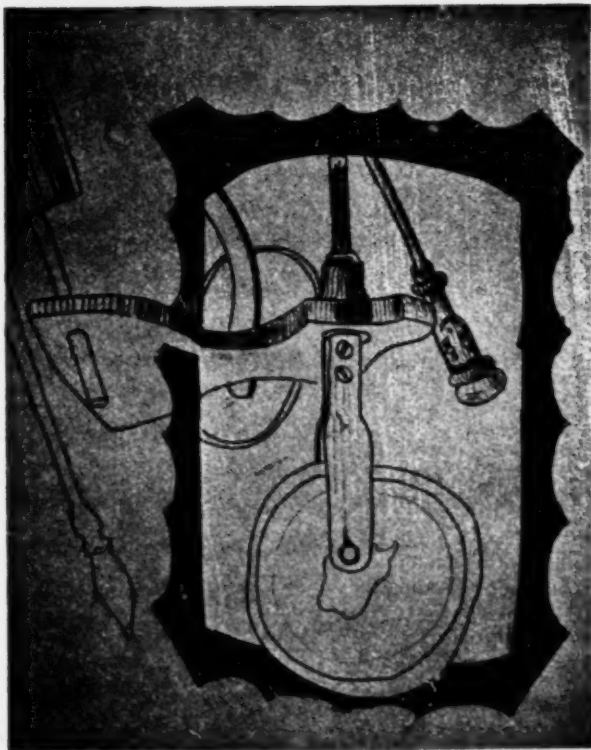
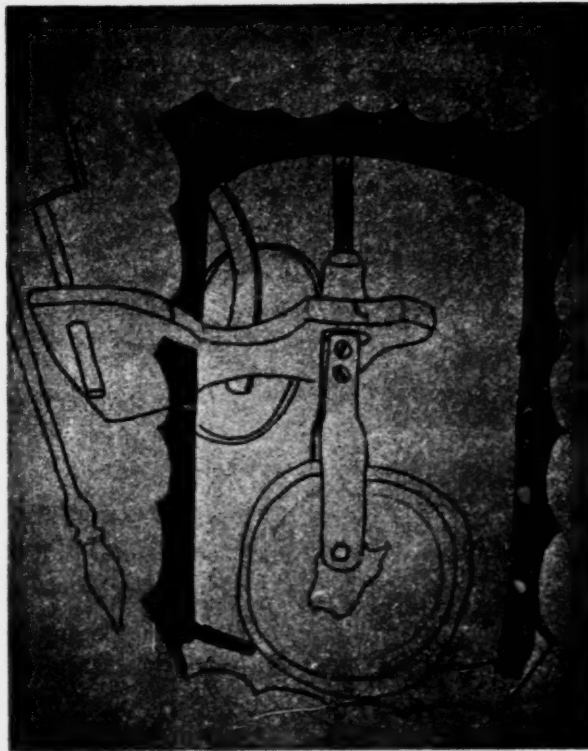
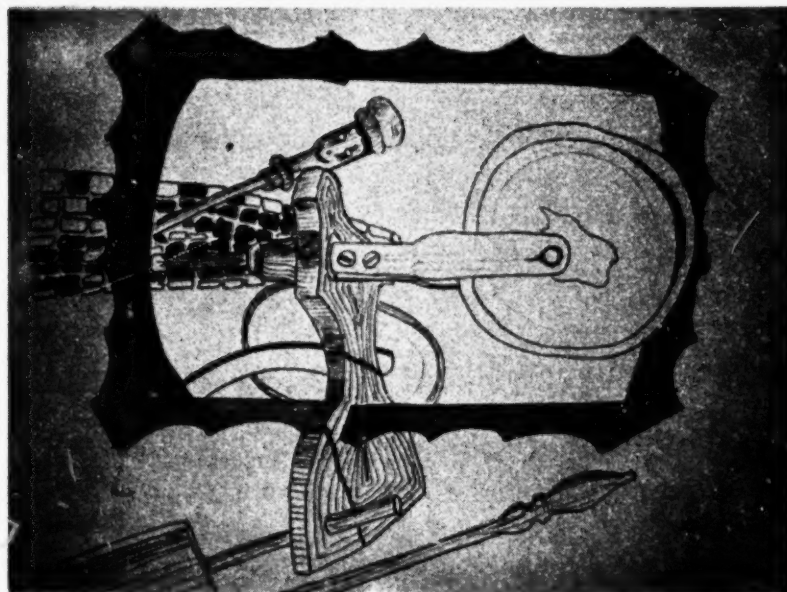
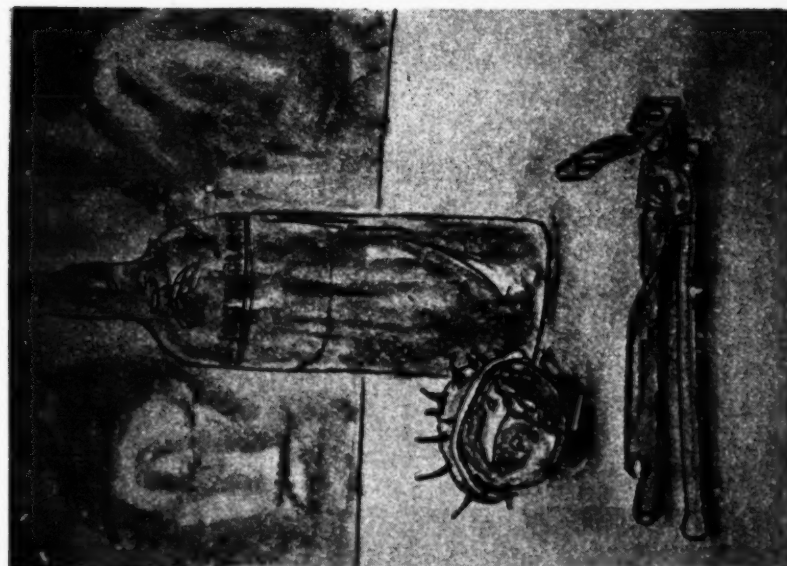


FIGURE 9

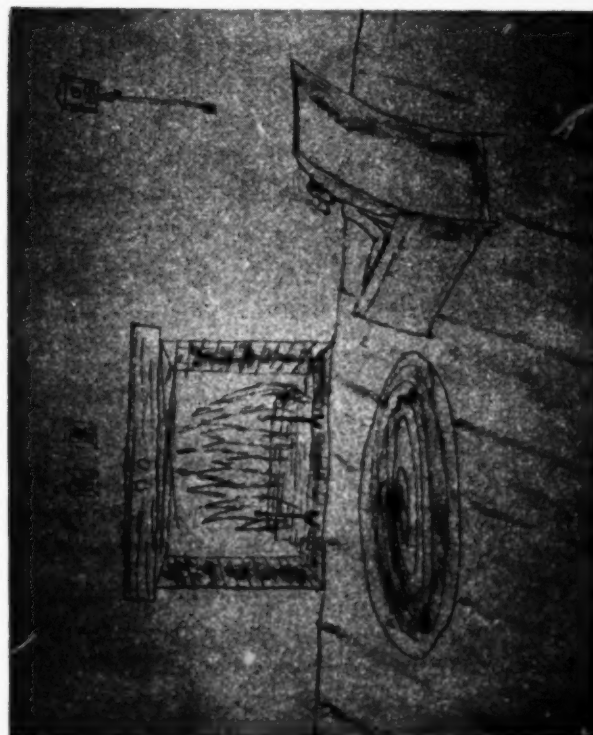
PROCESS JUDGMENTS SCORED HIGH FOR THE DEPENDENT VARIABLE:
ORIGINALITY, CRAFTSMANSHIP AND OVER-ALL AESTHETIC VALUE



HIGH

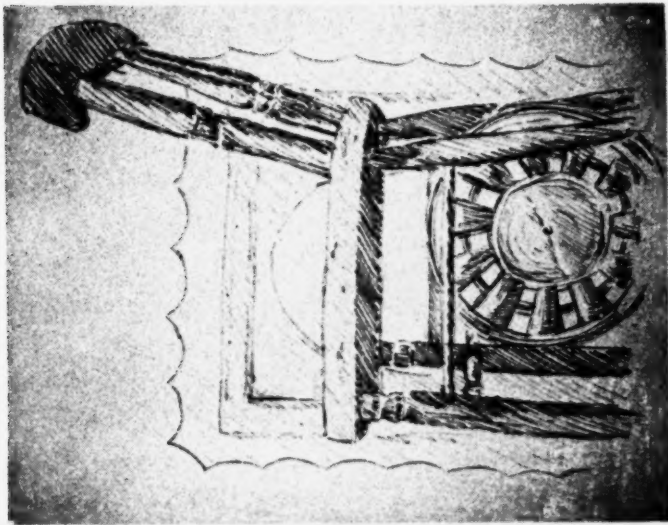


AVERAGE

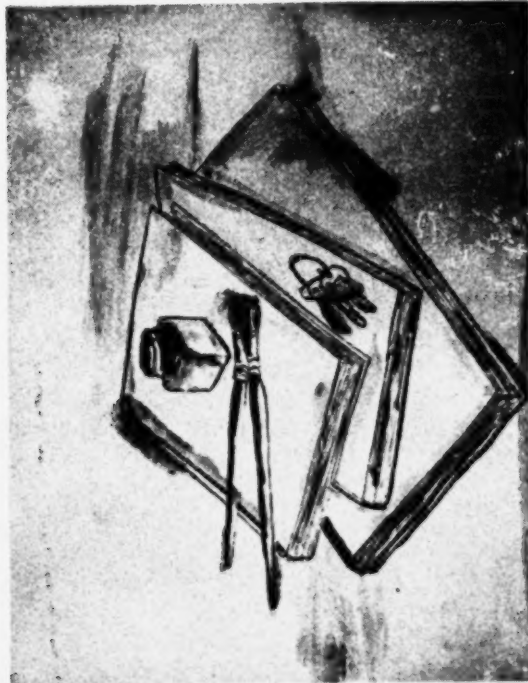


LOW

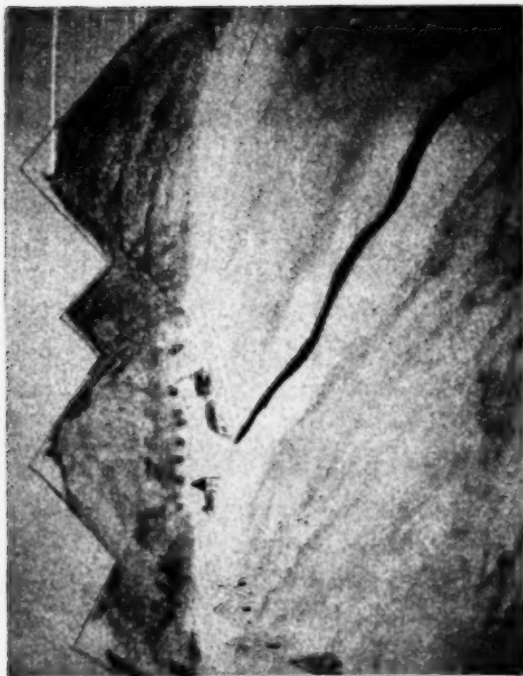
FIGURE 10
PRODUCT JUDGMENTS FOR THE DEPENDENT VARIABLE: ORIGINALITY



HIGH



AVERAGE

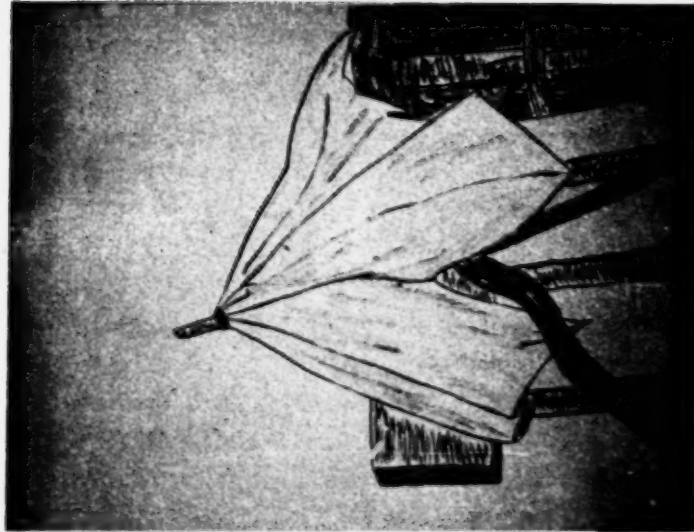


LOW

FIGURE 11
PRODUCT JUDGMENTS FOR THE DEPENDENT VARIABLE: CRAFTSMANSHIP



HIGH



AVERAGE



LOW

FIGURE 12

PRODUCT JUDGMENTS FOR THE DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE

CHAPTER III

ANALYSIS OF THE DATA AND FINDINGS

Introduction

The hypotheses were tested and answers were sought to the questions that were raised by this investigation by the use of statistical procedures. All of the data obtained during this study was computed on the IBM 7074 Computer. The following statistical analyses were made: (1) correlation coefficients for judge reliability and correlation, (2) correlation coefficients for the intercorrelation of the criteria as judged by the five expert art judges, (3) three analyses of variance tests, based on the total mean scores of the dependent variables: originality, craftsmanship, over-all aesthetic value and total variable scores which measured the relationship between the motivation, evaluation and stimuli and show the effects of the period to period dynamics.

Judged Agreement and the Intercorrelations of the Judged Criteria

Treatment of the Data

Each of the five expert art judges scored each drawing on an eight point scale during three judging sessions. These judgment scores, which were based on the dependent variables: originality, craftsmanship and over-all aesthetic value, were then transferred to IBM computer cards and prepared for computation. A total of 1320 IBM cards recorded each of the five judges scores for originality, craftsmanship and over-all aesthetic value for In-Class Process, In-Class Product and Out-of-Class Product. Total judged scores for each variable were also a part of the computation.

Statistical Analysis of the Data

Judge Reliability and Correlation

The correlation coefficients of the 18 variables (dependent variables: originality, craftsmanship and over-all aesthetic value and their totals for the five judges were derived from the

first run processed on the IBM 7074 Computer. The lower limits were estimated by plotting the means of the average judge to judge correlations. As Table I shows that the variable craftsmanship has the highest correlation of .667 and originality the lowest with .562.

The upper limits were estimated by finding the average of the total judge correlations. Craftsmanship reached a coefficient of .856, Over-all Aesthetic Value .832 and Originality .806. This test demonstrated a very high degree of agreement among the judges' scores. (See Table I).

As the correlations indicate, the .01 level of significance was achieved for the lower and upper limits of the correlation coefficient. The correction formula demonstrates the extremely high correlation between the judges' scores. The correlation coefficients of the 18 variables of the first run also provided the data from which the intercorrelations of the criteria were derived.

TABLE I
RELIABILITY ESTIMATES FOR THE THREE CRITERIA
AS JUDGED BY FIVE TRAINED ART JUDGES
N=1320

Criteria	Lower (Average Inter- Judge Agreement)	Upper (Average of Judge with Judge Total)	$\bar{r}_{aa}^*$
Originality	.562	.806	.865
Craftsmanship	.667	.856	.909
Over-all Aesthetic Value	.620	.832	.891

$$*\bar{r}_{aa} = \frac{a r^1_I}{1+(a-1)r^1_I}$$

a = number of judges

r^1_I = average inter-judge agreement

The intercorrelations between the judged criteria demonstrate a reliability beyond the .01 level of probability. As Table II indicates, the judges had greater difficulty in determining what was original than determining the value of craftsmanship and over-all aesthetic value. Table XL, page 122, shows the symmetric correlation from which the statistics on Tables I and II were obtained. The symmetric correlation program used in this study (11.3.003) was developed by M. E. Roberts and A. T. Wink (46).

TABLE II
THE INTERCORRELATION OF THE THREE CRITERIA
AS JUDGED BY THE FIVE JUDGES FOR THE
TEACHING EXPERIMENT
N=1320

	Originality	Craftsmanship
Craftsmanship	.798	
Aesthetics	.838	.928

The Analysis of Variance Statistic

The method of computation used in this investigation was the analysis of variance. These computations were used to measure the main effects and the interactions of the various factors, their levels and the dependent variables. Three analysis of variance computations were used to measure the data and test the hypotheses.

The first analysis of variance computed was based on the total judged scores of the six class sessions. The factorial design of this analysis was 2x2x2 in which the two levels of motivation (teacher-student), evaluation (teacher-student) and stimuli (visual-non-visual) were measured in terms of the judged scores of the three criteria (originality, craftsmanship and over-all aesthetic value) for In-Class Process, In-Class Product and Out-of-Class Product.

The second analysis of variance computed pertained to the period to period dynamics of the six class periods of the study. This analysis was a 2x2x6 factorial design which investigated the data to determine the significance of differences in the scores of the two levels of the motivation (teacher and student), the two levels of the evaluation (teacher and student) and the six class periods of each experimental group in terms of the judged scores of the dependent variables e.g. originality, craftsmanship, over-all aesthetic value and the total variables scores for the independent variables In-Class Process, In-Class Product and Out-of-Class Product.

The third analysis of variance computation was computed to determine if significant differences existed between the motivation and the evaluation or any combination of the four teaching treatments. Each of the dependent variables i.e. originality, craftsmanship and over-all aesthetic value were analyzed in terms of each individual period. The design of these analyses was a 2x2 factor design which investigated the data to determine the significance of difference between the two levels of the motivation (teacher-student), the two levels of evaluation (teacher-student), and the interaction of these two factors for the three dependent variables. The analyses were made in terms of the three major areas: In-Class Process, In-Class Product and Out-of-Class Product.

Tables and figures appear in the main text and in the Appendix. The summaries of the source of variation, for the most part, are included in the main text.

Probabilities of .05 or less were accepted as statistically significant for the analysis of variance technique which were used in this study. This method of computation was developed by John Streeter and Flora Chow Sun (53) and Richard Craig and John Streeter (15) of the Computation Center at The Pennsylvania State University.

Analysis of Variance for In-Class Process on the Dependent Variable: Originality

Table III, page 48, indicates that the .025 level of significance is reached between the main effects of the motivational treatment. The factor for stimuli also indicates that the .001 level of probability is reached between visual and non-visual sources of stimuli. An interaction between the motivational and stimuli factors shows a significance of .025. The main effect of

TABLE III

ANALYSIS OF VARIANCE FOR THE IN-CLASS PROCESS ON THE
DEPENDENT VARIABLE: ORIGINALITY
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	9.8524	9.8524	6.05	.025
EVALUATION: Teacher/Student	1	0.8985	0.8985	-----	-----
MOTIVATION X EVALUATION	1	1.8664	1.8664	-----	-----
STIMULI: Visual/Non-Visual	1	25.0985	25.0985	15.42	.001
MOTIVATION X STIMULI	1	11.1271	11.1271	6.83	.025
EVALUATION X STIMULI	1	2.0737	2.0737	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	2.2931	2.2931	-----	-----
Within	256	416.6183	1.6274		
Total		469.8280			

TABLE IV

MEANS OF THE IN-CLASS PROCESS JUDGMENTS ON THE
DEPENDENT VARIABLE: ORIGINALITY
N=264

Independent Variables	N	Mean
1. MOTIVATION		
Teacher	132	4.450
Student	132	4.064
2. EVALUATION		
Teacher	132	4.315
Student	132	4.199
3. STIMULI		
Visual	132	4.565
Non-Visual	132	3.949
4. MOTIVATION X EVALUATION		
Teacher-Student	66	4.476
Teacher-Teacher	66	4.476
Student-Teacher	66	4.206
Student-Student	66	3.921
5. MOTIVATION X STIMULI		
Teacher-Visual	66	4.964
Student-Visual	66	4.167
Student-Non-Visual	66	3.961
Teacher-Non-Visual	66	3.936
6. EVALUATION X STIMULI		
Teacher-Visual	66	4.712
Student-Visual	66	4.418
Teacher-Non-Visual	66	3.918
Student-Non-Visual	66	3.979
7. MOTIVATION X EVALUATION X STIMULI		
Teacher-Student-Visual	33	4.994
Teacher-Teacher-Visual	33	4.933
Student-Teacher-Visual	33	4.491
Student-Student-Non-Visual	33	4.000
Teacher-Student-Non-Visual	33	3.958
Student-Teacher-Non-Visual	33	3.921
Teacher-Teacher-Non-Visual	33	3.915
Student-Student-Visual	33	3.842

the evaluation and the motivation and evaluation interaction is not statistically significant.

The relationship of the main effects and interactions of the motivation, evaluation and stimuli is presented on Table III, page 48. This table shows that teacher motivation achieves higher mean scores than student motivation. The visual stimuli also attain a significantly higher mean score than the non-visual stimuli. This higher visual stimuli score is felt in both the motivational and evaluation factors. This is particularly noticeable when one observes the teacher motivation with visual stimuli mean score of 4.964 and the teacher motivation mean score under non-visual stimuli, 3.936 teacher motivation and student evaluation achieve higher means than mixed treatments. The motivation x stimuli shows teacher motivation and visual stimuli as significantly higher than other combinations with a mean of 5.203. Although a level of significance is not achieved for the motivation x evaluation x stimuli interaction, it is interesting to note the wide range of mean scores which reveal all the treatments under visual stimuli superior to the treatments in which non-visual stimuli are used. The comparison of the teaching treatments as they were related to the stimuli demonstrates that identical teaching strategies are greatly influenced by the nature of the stimuli.

Analysis of Variance for the In-Class Process on the Dependent Variable: Craftsmanship

The analysis of variance computation on this variable shows no significant difference in either of the main effects for motivation or evaluation, however, the factor for stimuli achieves the .001 level of probability. It may also be observed that the .05 level of significance is reached for the interacting motivation x stimuli factors and the treatment factors of motivation x evaluation.

A better understanding of the significance of the factors on the dependent variable craftsmanship may be gained by observing Table VI, page 52. The factor stimuli clearly demonstrates the significantly higher mean score of visual (4.914) over non-visual (3.950). The motivation x evaluation interaction also shows the teacher motivation and teacher evaluation as the most effective teaching treatment.

TABLE V

ANALYSIS OF VARIANCE OF THE IN-CLASS PROCESS ON THE
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	2.9696	2.9696	-----	-----
EVALUATION: Teacher/Student	1	0.9218	0.9218	-----	-----
MOTIVATION X EVALUATION	1	10.5600	10.5600	5.54	.025
STIMULI: Visual/Non-Visual	1	61.2873	61.2873	32.15	.001
MOTIVATION X STIMULI	1	8.8733	8.8733	4.65	.05
EVALUATION X STIMULI	1	0.0871	0.0871	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	0.1366	0.1366	-----	-----
Within	256	488.0171	1.9063		
Total		572.8528			

TABLE VI
MEANS OF IN CLASS PROCESS JUDGMENTS ON THE
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=264

Independent Variables	N	Mean
1. MOTIVATION		
Teacher	132	4.538
Student	132	4.326
2. EVALUATION		
Student	132	4.491
Teacher	132	4.373
3. STIMULI		
Visual	132	4.914
Non-Visual	132	3.950
4. MOTIVATION X EVALUATION		
Teacher-Teacher	66	4.679
Student-Student	66	4.585
Teacher-Student	66	4.397
Student-Teacher	66	4.067
5. MOTIVATION X STIMULI		
Teacher-Visual	66	5.203
Student-Visual	66	4.624
Student-Non-Visual	66	4.073
Teacher-Non-Visual	66	3.873
6. EVALUATION X STIMULI		
Student-Visual	66	4.991
Teacher-Visual	66	4.836
Student-Non-Visual	66	3.991
Teacher-Non-Visual	66	3.909
7. MOTIVATION X EVALUATION X STIMULI		
Teacher-Teacher-Visual	33	5.303
Teacher-Student-Visual	33	5.103
Student-Student-Visual	33	4.879
Student-Teacher-Visual	33	4.370
Teacher-Teacher-Non-Visual	33	4.291
Teacher-Teacher-Non-Visual	33	4.055
Student-Teacher-Non-Visual	33	3.764
Teacher-Student-Non-Visual	33	3.691

Analysis of Variance for the In-Class Process on the Dependent Variable: Over-all Aesthetic Value

The analysis of variance results on this variable reveal the .001 level of significance for the factor stimuli and the .01 level of significance for the interaction between the motivation and the stimuli. Table VII, page 54, also indicates that no significance is found for any of the other main effects or interactions.

Table VIII, page 55, demonstrates the effectiveness of visual stimuli which reaches a mean score of 4.796 as opposed to the 3.968 mean score for non-visual stimuli. The very high mean score of 5.227 for the teacher motivation and visual stimuli interaction, as compared to the mean score of 3.839 in the teacher motivation and non-visual stimuli, illustrates the strong influence of the source of stimuli. The motivation x evaluation x stimuli subgroups rank in the same order of high to low as was found in the analysis of variance computation for the dependent variable, craftsmanship. The four highest mean scores found in the visual stimuli and the lower mean scores show the same teaching treatments with non-visual stimuli. A comparison of the identical motivational sources and evaluative loci again demonstrates the important influence of stimuli on the judged mean scores.

Analysis of Variance for the In-Class Process on the Dependent Variable: Total Variable Scores

Table IX, page 56, shows that the factor, stimuli, is significant on the .001 level and the interaction between motivation and the stimuli is significant on the .01 level or probability. This finding was in keeping with the analysis of the other dependent variables with the visual over the non-visual level for the factor, stimuli. None of the other factors or interactions analyzed are statistically significant.

The mean scores shown on Table X, page 57, add greater understanding of the interactions which, although not achieving significance, show consistent patterns of effectiveness. The factor for stimuli shows visual over non-visual, in each analysis for In-Class Process. The mean rank order from 5.105 for teacher motivation with visual stimuli to a mean score of 3.867 for teacher motivation with non-visual stimuli also closely follows the pattern demonstrated on the other dependent variables for the motivation x stimuli interaction. Another pattern demonstrated is related to the motivation x evaluation x stimuli interaction.

TABLE VII

ANALYSIS OF VARIANCE OF THE IN-CLASS PROCESS ON THE
DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	6.0607	6.0607	-----	-----
EVALUATION: Teacher/Student	1	0.1025	0.1025	-----	-----
MOTIVATION X EVALUATION	1	3.2295	3.2295	-----	-----
STIMULI: Visual/Non-Visual	1	45.1692	45.1692	23.43	.001
MOTIVATION X STIMULI	1	20.7422	20.7422	10.76	.01
EVALUATION X STIMULI	1	0.0605	0.0605	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	2.4828	2.4828	-----	-----
Within	256	439.5054	1.9278		
Total		571.3528			

TABLE VIII

MEANS OF THE IN-CLASS PROCESS JUDGMENTS ON THE
DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE
N=264

Independent Variables		N	Mean
1. MOTIVATION			
	Teacher	132	4.533
	Student	132	4.230
2. EVALUATION			
	Student	132	4.402
	Teacher	132	4.362
3. STIMULI			
	Visual	132	4.796
	Non-Visual	132	3.968
4. MOTIVATION X EVALUATION			
	Teacher-Teacher	66	4.624
	Teacher-Student	66	4.442
	Student-Student	66	4.360
	Student-Teacher	66	4.100
5. MOTIVATION X STIMULI			
	Teacher-Visual	66	5.227
	Student-Visual	66	4.364
	Student-Non-Visual	66	4.097
	Teacher-Non-Visual	66	3.839
6. EVALUATION X STIMULI			
	Student-Visual	66	4.800
	Teacher-Visual	66	4.791
	Student-Non-Visual	66	4.003
	Teacher-Non-Visual	66	3.933
7. MOTIVATION X EVALUATION X STIMULI			
	Teacher-Teacher-Visual	33	5.236
	Teacher-Student-Visual	33	5.218
	Student-Student-Visual	33	4.382
	Student-Teacher-Visual	33	4.345
	Student-Student-Non-Visual	33	4.339
	Teacher-Teacher-Non-Visual	33	4.012
	Student-Teacher-Non-Visual	33	3.854
	Teacher-Student-Non-Visual	33	3.667

TABLE IX

ANALYSIS OF VARIANCE OF THE IN-CLASS PROCESS ON THE
DEPENDENT VARIABLE: TOTAL VARIABLE SCORES
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	4.009	4.009	-----	-----
EVALUATION: Teacher/Student	1	0.1145	0.1145	-----	-----
MOTIVATION X EVALUATION	1	1.7184	1.7184	-----	-----
STIMULI: Visual/Non-Visual	1	41.8409	41.8409	24.61	.001
MOTIVATION X STIMULI	1	12.8745	12.8745	7.57	.01
EVALUATION X STIMULI	1	0.2131	0.2131	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	1.3534	1.3534	-----	-----
Within	256	435.1832	1.6999		
Total		497.2989			

TABLE X
MEANS OF THE IN-CLASS PROCESS JUDGMENTS ON THE
DEPENDENT VARIABLE: TOTAL VARIABLE SCORES
N=264

Independent Variables	N	Mean
1. MOTIVATION		
Teacher	132	4.486
Student	132	4.239
2. EVALUATION		
Student	132	4.383
Teacher	132	4.341
3. STIMULI		
Visual	132	4.760
Non-Visual	132	3.964
4. MOTIVATION X EVALUATION		
Teacher-Teacher	66	4.546
Teacher-Student	66	4.426
Student-Student	66	4.341
Student-Teacher	66	4.138
5. MOTIVATION X STIMULI		
Teacher-Visual	66	5.105
Student-Visual	66	4.417
Student-Non-Visual	66	4.062
Teacher-Non-Visual	66	3.867
6. EVALUATION X STIMULI		
Teacher-Visual	66	4.768
Student-Visual	66	4.753
Student-Non-Visual	66	4.014
Teacher-Non-Visual	66	3.915
7. MOTIVATION X EVALUATION X STIMULI		
Teacher-Teacher-Visual	33	5.121
Teacher-Student-Visual	33	5.088
Student-Student-Visual	33	4.418
Student-Teacher-Visual	33	4.415
Student-Student-Non-Visual	33	4.264
Teacher-Teacher-Non-Visual	33	3.969
Student-Teacher-Non-Visual	33	3.860
Teacher-Student-Non-Visual	33	3.764

Although this interaction does not reach the .05 level of possibility, the teacher motivation and teacher evaluation scored the highest mean scores for the dependent variables when visual stimuli are used. The opposite teaching strategy which is student motivation and student evaluation achieves the highest mean scores when non-visual stimuli are used. This pattern, as is demonstrated again in the analysis of variance for the In-Class Product is clearly shown on Tables XII, XIV, XVI and XVIII.

Analysis of Variance for the In-Class Product on the Dependent Variable: Originality

The analysis of variance on Table XI, page 59, shows that a significant difference at the .01 level of significance exists between the two levels of motivation. The factor for the two levels of stimuli is also significant on the .001 level. The interaction between the motivational source and the stimuli achieves the .01 level of probability. These findings are closely related to the analyses previously mentioned for the In-Class Process on the dependent variable, originality. None of the other factors or interactions in this analysis reached the minimum level of statistical significance.

Table XII, page 60, shows that visual stimuli are significantly higher than non-visual stimuli. The motivational factor also shows that teacher motivation, which achieved a mean scores of 4.697 is also significantly higher than student motivation with a mean score of 4.309. The motivation x stimuli interaction shows teacher motivation with visual stimuli to have a mean score of 5.276 and teacher motivation with non-visual stimuli to be the lowest with a mean scores of 4.118.

Analysis of Variance for the In-Class Product on the Dependent Variable: Craftsmanship

Table XIII, page 61, shows a significant interaction between the motivational sources and the evaluative loci of the four treatment groups. This significance reaches the .001 level of probability. The factor for stimuli also shows a significant level beyond .001. The motivation x stimuli interactions shows a difference among the two levels of motivation and two levels of stimuli on the .05 level of significance. None of the other factors or interactions analyzed are statistically significant.

Table XIV, page 62, shows the mean scores of visual stimuli, 5.024, to be significantly higher than the 4.112 mean for

TABLE XI

ANALYSIS OF VARIANCE FOR THE IN-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: ORIGINALITY
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	9.9299	9.9299	8.57	.01
EVALUATION: Teacher/Student	1	0.0099	0.0099	-----	-----
MOTIVATION X EVALUATION	1	2.6397	2.6397	-----	-----
STIMULI: Visual/Non-Visual	1	37.1252	37.1252	32.05	.001
MOTIVATION X STIMULI	1	10.9634	10.9634	9.47	.01
EVALUATION X STIMULI	1	0.0252	0.0252	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	3.2749	3.2749	-----	-----
Within	256	296.5297	1.1583		
Total		360.4979			

TABLE XII

MEANS OF THE IN-CLASS PRODUCT JUDGMENTS ON THE
DEPENDENT VARIABLE: ORIGINALITY
N=264

Independent Variables		N	Mean
1. MOTIVATION			
	Teacher	132	4.697
	Student	132	4.309
2. EVALUATION			
	Student	132	4.509
	Teacher	132	4.497
3. STIMULI			
	Visual	132	4.878
	Non-Visual	132	4.128
4. MOTIVATION X EVALUATION			
	Teacher-Student	66	4.803
	Teacher-Teacher	66	4.591
	Student-Teacher	66	4.403
	Student-Student	66	4.215
5. MOTIVATION X STIMULI			
	Teacher-Visual	66	5.276
	Student-Visual	66	4.480
	Student-Non-Visual	66	4.138
	Teacher-Non-Visual	66	4.118
6. EVALUATION X STIMULI			
	Student-Visual	66	4.893
	Teacher-Visual	66	4.862
	Teacher-Non-Visual	66	4.131
	Student-Non-Visual	66	4.124
7. MOTIVATION X EVALUATION X STIMULI			
	Teacher-Student-Visual	33	5.503
	Teacher-Teacher-Visual	33	5.049
	Student-Teacher-Visual	33	4.676
	Student-Student-Visual	33	4.285
	Student-Student-Non-Visual	33	4.146
	Teacher-Teacher-Non-Visual	33	4.133
	Student-Teacher-Non-Visual	33	4.130
	Teacher-Student-Non-Visual	33	4.103

TABLE XIII
ANALYSIS OF VARIANCE FOR THE IN-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	0.1274	0.1274	-----	-----
EVALUATION: Teacher/Student	1	1.2001	1.2001	-----	-----
MOTIVATION X EVALUATION	1	23.7598	23.7598	14.71	.001
STIMULI: Visual/Non-Visual	1	54.9096	54.9096	34.00	.001
MOTIVATION X STIMULI	1	7.4001	7.4001	4.58	.05
EVALUATION X STIMULI	1	0.7214	0.7214	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	0.0877	0.0877	-----	-----
Within	256	413.3867	1.6148		
Total		501.5928			

TABLE XIV

MEANS OF THE IN-CLASS PRODUCT JUDGMENTS ON THE
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=264

Independent Variables	N	Mean
1. MOTIVATION		
Teacher	132	4.590
Student	132	4.546
2. EVALUATION		
Student	132	4.636
Teacher	132	4.501
3. STIMULI		
Teacher	132	5.024
Student	132	4.112
4. MOTIVATION X EVALUATION		
Student-Student	66	4.913
Teacher-Teacher	66	4.823
Teacher-Student	66	4.358
Student-Teacher	66	4.179
5. MOTIVATION X STIMULI		
Teacher-Visual	66	5.214
Student-Visual	66	4.835
Student-Non-Visual	66	4.258
Teacher-Non-Visual	66	3.967
6. EVALUATION X STIMULI		
Student-Visual	66	5.144
Teacher-Visual	66	4.905
Student-Non-Visual	66	4.127
Teacher-Non-Visual	66	4.097
7. MOTIVATION X EVALUATION X STIMULI		
Teacher-Teacher-Visual	33	5.376
Student-Student-Visual	33	5.236
Teacher-Student-Visual	33	5.052
Student-Student-Non-Visual	33	4.591
Teacher-Student-Visual	33	4.433
Teacher-Student-Non-Visual	33	4.269
Student-Teacher-Non-Visual	33	3.924
Teacher-Student-Non-Visual	33	3.664

non-visual stimuli. The interaction between the four teaching treatments also shows that student motivation and student evaluation and the teacher motivation and teacher evaluation are considerably higher than the other two treatments. The motivation x stimuli interaction illustrates the influence the stimuli had on the motivational source. This influence is clearly demonstrated in the wide range of difference between the teacher motivation with visual stimuli which has a mean score of 5.213 and the teacher motivation with non-visual stimuli which has a low mean score of 3.967.

Analysis of Variance for the In-Class Product on the Dependent Variable: Over-all Aesthetic Value

The analysis of variance computation shows that a significant difference on the .001 level of probability is demonstrated for the factor stimuli and the interaction between the factors for motivation and stimuli. The interaction between the motivation and the evaluation also proves to be significant on the .01 level. These findings are reported on Table XV, page 64. No other factors or interactions are shown to be statistically significant.

Table XVI, page 65, indicates that the mean for visual stimuli is greater than that of non-visual stimuli. The interaction between the motivation and the evaluation shows the teacher motivation and teacher evaluation with a mean score of 4.864 and the lowest mean score of 4.200 for the student motivation and teacher evaluation teaching treatment. The motivation x stimuli interaction indicates that teacher motivation, under the influence of visual stimuli, has a very high mean score of 5.288 as compared to the low mean score of 3.956 for teacher motivation with non-visual stimuli. The student motivational treatment with visual stimuli, although not as high a mean score as the teacher motivation, shows less loss in the mean score when non-visual stimuli is used.

Analysis of Variance for the In-Class Product on the Dependent Variable: Total Variables Scores

The analysis of variance computations show the factor for stimuli to have a significant difference between the visual and non-visual means at the .001 level of probability. The interaction between the motivation and the stimuli also are found to be significant at the .01 level. The interaction between the motivational source and the evaluation locus of the four teaching

TABLE XV

ANALYSIS OF VARIANCE FOR THE IN-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	3.2964	3.2964	-----	-----
EVALUATION: Teacher/Student	1	0.1230	0.1230	-----	-----
MOTIVATION X EVALUATION	1	12.7864	12.7864	9.06	.01
STIMULI: Visual/Non-Visual	1	39.9517	39.9517	28.31	.001
MOTIVATION X STIMULI	1	20.2409	20.2409	14.35	.001
EVALUATION X STIMULI	1	0.0238	0.0238	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	2.1637	2.1637	-----	-----
Within	256	361.1965	1.4109		
Total		439.7824			

TABLE XVI

MEANS OF THE IN-CLASS PRODUCT JUDGMENTS ON THE
DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE
N=264

Independent Variables	N	Mean
1. MOTIVATION		
Teacher	132	4.622
Student	132	4.399
2. EVALUATION		
Teacher	132	4.531
Student	132	4.489
3. STIMULI		
Visual	132	4.899
Non-Visual	132	4.121
4. MOTIVATION X EVALUATION		
Teacher-Teacher	66	4.864
Student-Student	66	4.597
Teacher-Student	66	4.380
Student-Teacher	66	4.200
5. MOTIVATION X STIMULI		
Teacher-Visual	66	5.288
Student-Visual	66	4.511
Student-Non-Visual	66	4.286
Teacher-Non-Visual	66	3.956
6. EVALUATION X STIMULI		
Teacher-Teacher	66	4.930
Student-Teacher	66	4.868
Teacher-Student	66	4.133
Student-Student	66	4.109
7. MOTIVATION X EVALUATION X STIMULI		
Teacher-Teacher-Visual	33	5.449
Teacher-Student-Visual	33	5.127
Student-Student-Visual	33	4.609
Student-Student-Non-Visual	33	4.585
Student-Teacher-Visual	33	4.412
Teacher-Teacher-Non-Visual	33	4.278
Student-Teacher-Non-Visual	33	3.988
Teacher-Student-Non-Visual	33	3.633

treatments achieves the .05 level of significance. The other factors and interactions are not statistically significant. The analysis for this dependent variable is illustrated on Table XVII, page 67.

The illustration of the mean scores on Table XVIII, page 68, shows the factor for stimuli to have a wide range of scores between the visual mean which is 4.940 and the non-visual mean which is 4.128. The mean score of 5.279 for teacher motivation with visual stimuli is also considerably higher than the teacher motivation mean score of 4.021 when non-visual stimuli is used. As has been reported earlier, the difference between the mean score of student motivation with visual stimuli and student motivation with non-visual stimuli correlated more closely and were less effected by the stimuli than were the drawings produced under the teacher motivation strategy. The interaction between the motivational source and evaluative locus replicated a pattern that had appeared earlier. The teacher motivation and teacher evaluation with a mean score of 4.789 and the teaching treatment of student motivation and student evaluation with a mean score of 4.602 proves to be superior to the teacher motivation and student evaluation and the student motivation and teacher evaluation teaching treatments which reveal mean scores of 4.511 and 4.235. Although the motivation x evaluation x stimuli interaction does not achieve a level of statistical significance it is interesting to note that the visual stimuli is related to all of the higher mean scores in which all of the teaching treatments are found. The fact that student evaluation scored a higher mean score than teacher evaluation is also a pattern that was similar to the findings in the In-Class Process analysis.

Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Originality

The only factor which achieves statistical significance is the interaction between the two main strategies of motivation and evaluation. As Table XIX, page 69, shows the .025 level of probability is found. The stimuli factor for the first time does not achieve the minimum level of significance, and as the table indicates, there is very little variance.

Table XX, page 70, demonstrates the relatively close mean scores for the motivation, evaluation and stimuli factors. Also, the mean scores for the factorial interactions appear to be quite related. The interaction between the motivation and the evaluation shows the widest range from the mean score of 5.103 for teacher

TABLE XVII

ANALYSIS OF VARIANCE FOR THE IN-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: TOTAL VARIABLE SCORES
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	3.5468	3.5468	-----	-----
EVALUATION: Teacher/Student	1	0.1273	0.1273	-----	-----
MOTIVATION X EVALUATION	1	6.8741	6.8741	5.38	.05
STIMULI: Visual/Non-Visual	1	43.5297	43.5297	34.04	.001
MOTIVATION X STIMULI	1	13.0961	13.0961	10.24	.01
EVALUATION X STIMULI	1	0.0490	0.0490	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	1.5767	1.5767	-----	-----
Within	256	327.3735	1.2788		
Total		396.1732			

TABLE XVIII

MEANS OF THE IN-CLASS PRODUCT JUDGMENTS ON THE
DEPENDENT VARIABLE: TOTAL VARIABLE SCORES
N=264

Independent Variables	N	Mean
1. MOTIVATION		
Teacher	132	4.650
Student	132	4.418
2. EVALUATION		
Student	132	4.556
Teacher	132	4.512
3. STIMULI		
Visual	132	4.940
Non-Visual	132	4.128
4. MOTIVATION X EVALUATION		
Teacher-Teacher	66	4.789
Student-Student	66	4.602
Teacher-Student	66	4.511
Student-Teacher	66	4.235
5. MOTIVATION X STIMULI		
Teacher-Teacher	66	5.279
Student-Teacher	66	4.602
Student-Student	66	4.235
Teacher-Student	66	4.021
6. EVALUATION X STIMULI		
Student-Teacher	66	4.976
Teacher-Teacher	66	4.905
Student-Student	66	4.136
Teacher-Student	66	4.119
7. MOTIVATION X EVALUATION X STIMULI		
Teacher-Teacher-Visual	33	5.327
Teacher-Student-Visual	33	5.230
Student-Student-Visual	33	4.721
Student-Teacher-Visual	33	4.482
Student-Student-Non-Visual	33	4.482
Teacher-Teacher-Non-Visual	33	4.251
Student-Teacher-Non-Visual	33	3.988
Teacher-Student-Non-Visual	33	3.790

TABLE XIX

ANALYSIS OF VARIANCE FOR THE OUT-OF-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: ORIGINALITY
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	0.0732	0.0732	-----	-----
EVALUATION: Teacher/Student	1	1.6386	1.6386	-----	-----
MOTIVATION X EVALUATION	1	13.4552	13.4552	6.40	.025
STIMULI: Visual/Non-Visual	1	2.3294	2.3294	-----	-----
MOTIVATION X STIMULI	1	0.9220	0.9220	-----	-----
EVALUATION X STIMULI	1	0.5455	0.5455	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	0.0008	0.0008	-----	-----
Within	256	537.9879	2.1015		
Total		556.9526			

TABLE XX
MEANS OF THE OUT-OF-CLASS PRODUCT JUDGMENTS ON THE
DEPENDENT VARIABLE: ORIGINALITY
N=264

Independent Variables		N	Mean
1. MOTIVATION			
	Teacher	132	4.798
	Student	132	4.765
2. EVALUATION			
	Teacher	132	4.861
	Student	132	4.703
3. STIMULI			
	Visual	132	4.876
	Non-Visual	132	4.688
4. MOTIVATION X EVALUATION			
	Teacher-Student	66	5.103
	Student-Student	66	4.912
	Student-Teacher	66	4.618
	Teacher-Student	66	4.494
5. MOTIVATION X STIMULI			
	Teacher-Visual	66	4.952
	Student-Visual	66	4.800
	Student-Non-Visual	66	4.700
	Teacher-Non-Visual	66	4.646
6. EVALUATION X STIMULI			
	Teacher-Visual	66	4.910
	Student-Visual	66	4.842
	Teacher-Non-Visual	66	4.812
	Student-Non-Visual	66	4.564
7. MOTIVATION X EVALUATION X STIMULI			
	Teacher-Teacher-Visual	33	5.212
	Student-Student-Visual	33	4.993
	Teacher-Teacher-Non-Visual	33	4.993
	Student-Student-Non-Visual	33	4.830
	Teacher-Student-Visual	33	4.691
	Student-Teacher-Non-Visual	33	4.630
	Student-Teacher-Visual	33	4.606
	Teacher-Student-Non-Visual	33	4.297

motivation and teacher evaluation down to teacher motivation and student evaluation which had a mean score of 4.494. The order of the four teaching treatments does not maintain this pattern, as will be explained in the remainder of this section on the Out-of-Class Product.

Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Craftsmanship

The findings of the analysis of variance on this variable show the interaction between the factors motivation and evaluation to have a highly significant degree of variance. As Table XXI, page 72, demonstrates, this interaction and the factor for stimuli achieves the .001 level of probability.

Table XXII, page 73, shows the relationship of the motivation and evaluation to have changed into a pattern that is repeated in three of the four analyses for the Out-of-Class Product. The interaction of the student motivation and student evaluation achieves a mean score of 5.724 and teacher motivation and teacher evaluation is second highest with a mean score of 5.515. The student motivation and teacher evaluation and the teacher motivation and student evaluation are significantly lower with mean scores of 4.506 and 4.488. It is also observed that both student motivation and student evaluation have the highest mean scores in the factors for motivation and evaluation. The Out-of-Class Product analysis of craftsmanship also shows the highest mean score of any of the analyses.

Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Over-all Aesthetic Value

Table XXIII, page 74, shows the motivation and evaluative interaction to be significant on the .001 level. The factor for stimuli also achieves the .05 level of significance for this variable. The motivational and evaluative interaction is identical to the previous variable originality in that student motivation and student evaluation, teacher motivation and teacher evaluation achieve higher mean scores than student motivation and teacher evaluation and the teacher motivation and student evaluation. The relationship of the factor for stimuli shows the visual stimuli with a higher mean score than the non-visual.

TABLE XXI
ANALYSIS OF VARIANCE FOR THE OUT-OF-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	0.0852	0.0852	-----	-----
EVALUATION: Teacher/Student	1	0.6012	0.6012	-----	-----
MOTIVATION X EVALUATION	1	83.1940	83.1940	31.64	.001
STIMULI: Visual/Non-Visual	1	36.5273	36.5273	13.89	.001
MOTIVATION X STIMULI	1	1.1467	1.1467	-----	-----
EVALUATION X STIMULI	1	10.3213	10.3213	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	2.2926	2.2926	-----	-----
Within	256	673.1663	2.6269	-----	-----
Total		808.1016			

TABLE XXII

MEANS OF THE OUT-OF-CLASS PRODUCT JUDGMENTS ON THE
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=264

Independent Variables		N	Mean
1. MOTIVATION			
	Student	132	5.115
	Teacher	132	5.002
2. EVALUATION			
	Student	132	5.106
	Teacher	132	5.011
3. STIMULI			
	Visual	132	5.430
	Non-Visual	132	4.686
4. MOTIVATION X EVALUATION			
	Student-Student	66	5.724
	Teacher-Teacher	66	5.515
	Student-Teacher	66	4.506
	Teacher-Student	66	4.488
5. MOTIVATION X STIMULI			
	Teacher-Visual	66	5.439
	Student-Visual	66	5.421
	Student-Non-Visual	66	4.809
	Teacher-Non-Visual	66	4.564
6. EVALUATION X STIMULI			
	Student-Visual	66	5.676
	Teacher-Visual	66	5.185
	Teacher-Non-Visual	66	4.836
	Student-Non-Visual	66	4.536
7. MOTIVATION X EVALUATION X STIMULI			
	Student-Student-Visual	33	6.321
	Teacher-Teacher-Visual	33	5.849
	Teacher-Teacher-Non-Visual	33	5.182
	Student-Student-Non-Visual	33	5.127
	Teacher-Student-Visual	33	5.030
	Student-Teacher-Visual	33	4.521
	Student-Teacher-Non-Visual	33	4.491
	Teacher-Student-Non-Visual	33	3.946

TABLE XXIII

ANALYSIS OF VARIANCE FOR THE OUT-OF-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	2.0739	2.0739	-----	-----
EVALUATION: Teacher/Student	1	0.0254	0.0254	-----	-----
MOTIVATION X EVALUATION	1	44.6741	44.6741	20.26	.001
STIMULI: Visual/Non-Visual	1	10.1636	10.1636	4.61	.05
MOTIVATION X STIMULI	1	1.2003	1.2003	-----	-----
EVALUATION X STIMULI	1	5.4123	5.4123	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	0.3070	0.3070	-----	-----
Within	256	564.4485	2.2049		
Total		628.3051			

TABLE XXIV

MEANS OF THE OUT-OF-CLASS PRODUCT JUDGMENTS ON THE
DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE
N=264

Independent Variables	N	Mean
1. MOTIVATION		
Student	132	4.674
Teacher	132	4.497
2. EVALUATION		
Teacher	132	4.596
Student	132	4.576
3. STIMULI		
Visual	132	4.782
Non-Visual	132	4.389
4. MOTIVATION X EVALUATION		
Student-Student	66	5.076
Teacher-Teacher	66	4.918
Student-Teacher	66	4.272
Teacher-Student	66	4.076
5. MOTIVATION X STIMULI		
Student-Visual	66	4.803
Teacher-Visual	66	4.760
Student-Non-Visual	66	4.546
Teacher-Non-Visual	66	4.233
6. EVALUATION X STIMULI		
Student-Visual	66	4.915
Teacher-Visual	66	4.649
Teacher-Non-Visual	66	4.542
Student-Non-Visual	66	4.236
7. MOTIVATION X EVALUATION X STIMULI		
Student-Student-Visual	33	5.382
Teacher-Teacher-Visual	33	5.073
Student-Student-Non-Visual	33	4.770
Teacher-Teacher-Non-Visual	33	4.763
Teacher-Student-Visual	33	4.448
Student-Teacher-Non-Visual	33	4.321
Student-Teacher-Visual	33	4.224
Teacher-Student-Non-Visual	33	3.703

Analysis of Variance for the Out-of-Class Product on the Dependent Variable: Total Variable Scores

The analysis of variance computations as presented on Table XXV, page 77, show the interaction between the motivation and evaluation factors to be significant on the .001 level of probability. The factor for stimuli also achieves the .025 level of significance for this variable.

Table XXVI, page 78, illustrates the continued pattern of motivational and evaluative interaction that was observed throughout the analysis of the Out-of-Class Product. The student motivation and student evaluation with a mean score of 5.253 and teacher motivation and student evaluation with a mean score of 5.217 are considerably higher than the interactions of student motivation and teacher evaluation, which have a mean score of 4.471, and teacher motivation and student evaluation which have a mean score of 4.353.

A very interesting observation was made in relation to the motivation x evaluation x stimuli. It was observed that something distinctly different happened in relation to this interaction when the drawings were judged for Out-of-Class Product than either the In-Class Process and In-Class Product total variables scores on Table X, page 57 and Table XVIII, page 68, it was observed that the four teaching treatments when ranked in order in terms of visual stimuli and non-visual stimuli. As Table XXV, page 77, indicates when the drawings were completed out of the classroom, the student motivation and student evaluation and the teacher motivation and teacher evaluation were judged to have the highest mean scores for teacher motivation and teacher evaluation and student motivation and the student evaluation for non-visual stimuli. This indicates that a difference in the creative setting during the experiment had a significant influence on the drawings in terms of the nature of the stimuli.

Analysis of Variance for the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Originality

The analyses of variance computations indicate that a statistically significant level of probability is achieved for the factor period to period dynamics. As Table XLI, page 124, in the Appendix, illustrates this significance is on the .01 level. The rank order shown on Table XXVII, page 79, describes the highest to lowest mean scores for the dependent variables originality for the six sessions.

TABLE XXV

ANALYSIS OF VARIANCE FOR THE OUT-OF-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: TOTAL VARIABLE SCORES
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	0.3939	0.3939	-----	-----
EVALUATION: Teacher/Student	1	0.1103	0.1103	-----	-----
MOTIVATION X EVALUATION	1	44.6742	44.6742	20.84	.001
STIMULI: Visual/Non-Visual	1	12.6545	12.6545	5.90	.025
MOTIVATION X STIMULI	1	1.3105	1.3105	-----	-----
EVALUATION X STIMULI	1	3.9275	3.9275	-----	-----
MOTIVATION X EVALUATION X STIMULI	1	0.6403	0.6403	-----	-----
Within	256	548.7030	2.1434		
Total		612.4142			

TABLE XXVI

MEANS OF THE OUT-OF-CLASS PRODUCT JUDGMENTS ON THE
DEPENDENT VARIABLE: TOTAL VARIABLE SCORES
N=264

Independent Variables	N	Mean
1. MOTIVATION		
Student	132	4.862
Teacher	132	4.785
2. EVALUATION		
Teacher	132	4.844
Student	132	4.803
3. STIMULI		
Visual	132	5.042
Non-Visual	132	4.605
4. MOTIVATION X EVALUATION		
Student-Student	66	5.253
Teacher-Teacher	66	5.217
Student-Teacher	66	4.471
Teacher-Student	66	4.353
5. MOTIVATION X STIMULI		
Teacher-Visual	66	5.074
Student-Visual	66	5.010
Student-Non-Visual	66	4.714
Teacher-Non-Visual	66	4.496
6. EVALUATION X STIMULI		
Student-Visual	66	5.144
Teacher-Visual	66	4.941
Student-Non-Visual	66	4.747
Teacher-Non-Visual	66	4.462
7. MOTIVATION X EVALUATION X STIMULI		
Student-Student-Visual	33	5.573
Teacher-Teacher-Visual	33	5.433
Teacher-Teacher-Non-Visual	33	5.000
Student-Student-Non-Visual	33	4.933
Teacher-Student-Visual	33	4.715
Student-Teacher-Non-Visual	33	4.494
Student-Teacher-Visual	33	4.449
Teacher-Student-Non-Visual	33	3.991

TABLE XXVII

MEANS OF THE PERIOD TO PERIOD DYNAMICS OF
THE IN-CLASS PROCESS ON THE DEPENDENT
VARIABLE: ORIGINALITY

Means Ranked in Ascending Order	
Periods	Means
2	3.8910
6	3.9180
4	4.0360
1	4.3360
3	4.5500
5	4.8090

As Table XXVIII, page 80, indicates that the visual stimuli scores are higher mean scores than the non-visual. The ascending mean scores also indicate that an increase is made in the mean scores for visual stimuli, however, the non-visual stimuli does not show this effect.

The dynamics of the four teaching treatments are graphically illustrated on Table LIII, page 148 and Figure 13, page 136, in the Appendix. The effectiveness of the teacher motivation and teacher evaluation and the teacher motivation and student evaluation treatment is clearly seen in periods one, three and five in which visual stimuli were used. The higher mean scores of the student motivation and student evaluation are shown in period two and four, however, in period six this strategy does not achieve the highest scores. An analysis of variance computation indicates that the four teaching treatments are not statistically different from each other in any individual period. These computations are shown on Tables LII, LIV, LV LVI, LVII, LVIII in the Appendix.

Analysis of Variance for the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Craftsmanship

Table XLII, page 125, in the Appendix, shows that the .001 level of significance is achieved between the six periods of instruction for this variable. A comparison of the rank order of the period to period dynamics indicates that visual stimuli have higher means than the non-visual stimuli.

The means which appear on Table XXVIII, indicate that an increase in judged mean scores was made over the six weeks for sessions in which non-visual stimuli was used e.g. periods two, four and six. As was noted, the visual stimuli achieved higher mean scores but period five was a little lower than period three.

TABLE XXVIII
MEANS OF THE PERIOD TO PERIOD DYNAMICS OF
THE IN-CLASS PROCESS ON THE DEPENDENT
VARIABLE: CRAFTSMANSHIP

Means Ranked in Ascending Order	
Periods	Means
2	3.7410
4	3.9640
6	4.1450
1	4.5730
5	5.0050
3	5.1640

Table LIV, page 148, and Figure 14, page 137, in the Appendix, indicate the period to period means for each of the teaching treatment of this investigation. The higher mean scores of the teacher motivation and teacher evaluation are graphically shown for the periods when visual stimuli are used. As it may be observed, the student motivation and student evaluation achieved high mean scores in periods two, four and six, which employed non-visual stimuli, and in period five where visual stimuli were used. An analysis of variance computation between the four teaching treatments indicates that no significant difference exists between them in each individual period. This analysis is shown on Tables LIV, LVII, LX, LXIII, LXVI, LXIX, in the Appendix.

Analysis of Variance for the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Over-all Aesthetic Value

Table XLIII, page 126, of the Appendix, shows that significance is achieved on the .001 level for the period to period dynamics. The interaction of the motivation x period to period dynamics is also significant on the .05 level.

TABLE XXIX

MEANS OF THE PERIOD TO PERIOD DYNAMICS OF
THE IN-CLASS PROCESS ON THE DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE

Means Ranked in Ascending Order	
Periods	Means
2	3.7550
4	3.9450
6	4.2050
1	4.4770
5	4.9360
3	4.9730

The pattern of ascending mean scores on Table XXIX shows the basic pattern of visual stimuli achieving higher mean score than non-visual stimuli. The non-visual session demonstrates how the four teaching methods score higher means from session to session. The visual stimuli show slight smaller mean score in period five, and thus period three, which is the middle session of visual stimuli, has the highest mean score.

Figure 15, page 138 and Table LV, page 149, indicate the difference in mean scores that are attained between the period that had visual stimuli and those which had non-visual stimuli. For the most part, the teacher motivation and teacher evaluation treatment has the highest mean scores during the periods of visual stimuli. The student motivation and student evaluation treatment achieves the highest scores during the non-visual stimuli periods. An analysis of variance between the four teaching treatment of each period indicates that the .05 level of significance is achieved during period four. This statistic is shown on Tables LV, LVIII, LXI, LXIV, LXVII, LXX, in the Appendix.

Analysis of Variance for the Period to Period Dynamics of the In-Class Process on the Dependent Variable: Total Variable Scores

The analysis of variance computations presented on Table XLIV, page 127, in the Appendix, indicates that a significant degree of difference on the .001 level exists between the six teaching sessions. As one may observe on Table XXX, page 82, this

difference ranges from a low mean of 3.780 for period two to a high mean score of 4.936 in period five.

TABLE XXX
MEANS OF THE PERIOD TO PERIOD DYNAMICS OF
THE IN-CLASS PROCESS ON THE DEPENDENT
VARIABLES: TOTAL VARIABLE SCORES

Means Ranked in Ascending Order	
Periods	Means
2	3.7800
4	4.0070
6	4.1070
1	4.4520
3	4.8930
5	4.9360

The relationship of periods two, four and six shows a steady mean score gain for periods when non-visual stimuli are used. The relationship of periods one, three and five also indicates a steady increase in the mean score for the period when visual stimuli are used.

Table LVI, page 149 and Figure 16, page 139, in the Appendix, show the comparison of the mean scores as they relate to each period for each group. The highest mean scores for periods when visual stimuli are employed are made by the teacher motivation and teacher evaluation and the teacher motivation and student evaluation treatment. The non-visual periods show the highest means to be made by the student motivation and student evaluation and the student motivation and teacher evaluation treatments.

Analysis of Variance of the Period to Period Dynamics for the In-Class Product on the Dependent Variable: Originality

The computations of the analysis of variance of this variable indicate that a significant difference exists between the six class periods on the .001 level of probability. Table XLV, page 128, in the Appendix also indicates that the .05 level is reached between the factor for motivation and the period to period dynamics.

This provides evidence of the strong effect the motivation has on the mean scores in the various periods.

The order of the mean scores for the six periods gives evidence that the non-visual stimuli are judged lower than the visual stimuli. Also, the loss in the mean scores of the non-visual sessions indicates that for originality the four treatment groups responded negatively. The pattern of gain in the visual stimuli for periods one, three and five shows the opposite order than that observed in the non-visual periods.

TABLE XXXI
MEANS OF THE PERIOD TO PERIOD DYNAMICS OF
THE IN-CLASS PRODUCT ON THE DEPENDENT
VARIABLE: ORIGINALITY

Means Ranked in Ascending Order	
Periods	Means
6	4.0840
4	4.0950
2	4.2050
1	4.7450
3	4.9270
5	4.9610

Table LVII, page 150 and Figure 17, page 140, in the Appendix illustrate the four teaching treatments on a period to period basis. The high scores of teacher motivation and teacher evaluation and the teacher motivation and student evaluation for the visual periods and the effectiveness of the student motivation and student evaluation mean scores during the non-visual periods are an important pattern of mean scores in the motivational and evaluation interaction. In an analysis of computation between the teaching treatment of each of the six periods, no significance is shown. These computations are found on Tables LXXI, LXXIV, LXXVII, LXXX, LXXXIII, LXXXVI in the Appendix.

Analysis of Variance for the Period to Period Dynamics of the In-Class Product on the Dependent Variable: Craftsmanship

Table XLVI, page 129, in the Appendix shows that the .001

level of significance is reached between the six periods for the variable craftsmanship. The rank order of the six periods, as shown on Table XXXII shows the difference between period 2, (3.907) and period five, (5.152) mean scores, and also shows the superior mean scores of the visual stimuli periods. The mean gain scores of both the visual and non-visual stimuli groups show a progressive increase from period to period. From this evidence, inferences are drawn which suggest that learning was taking place.

TABLE XXXII
MEANS OF THE PERIOD TO PERIOD DYNAMICS OF
THE IN-CLASS PRODUCT ON THE DEPENDENT
VARIABLE: CRAFTSMANSHIP

Means Ranked in Ascending Order	
Periods	Means
2	3.9070
4	4.1270
6	4.3020
1	4.8110
3	5.1090
5	5.1520

The total mean scores of the four teaching treatments are shown on Table LVIII, page 150 and Figure 18, page 141, in the Appendix. The pattern of high mean scores for the teacher motivation and teacher evaluation and the teacher motivation and student evaluation during periods of visual stimuli are maintained, and the high mean scores of student motivation and student evaluation for the non-visual stimuli periods also may be observed. The highest mean score of 5.764 is achieved by the student motivation and student evaluation treatment. This finding is not in keeping with the pattern of high mean scores that occurred for the most part. The analysis of variance computations comparing the means of the four teaching treatments in each period show that a significant difference exists between these means for this variable in period four on the .01 level and period five on the .05 level. These analyses appear on Tables LXXII, LXXV, LXXVIII, LXXXI, LXXXIV, LXXXVII, in the Appendix.

Analysis of Variance for the Period to Period Dynamics of the In-Class Product on the Dependent Variable: Over-all Aesthetic Value

The analysis of variance on Table XLVII, page 130, in the Appendix indicates that the .001 level of significance is reached for the factor period to period dynamics. The .025 level of significance is also achieved for the interaction between the motivation and the six periods of this variable. Table XXXIII demonstrates the difference between the low mean score of 3.964 for period two and the high mean score of 5.034 for period three. The visual stimuli period attains higher mean scores than the non-visual sessions, and for the most part the mean scores are higher for each succeeding period where the same stimuli are used.

TABLE XXXIII

MEANS OF THE PERIOD TO PERIOD DYNAMICS OF
THE IN-CLASS PRODUCT ON THE DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE

Means Ranked in Ascending Order	
Periods	Means
2	3.9640
4	4.0930
6	4.3070
1	4.6520
5	5.0110
3	5.0340

Table LIX, page 151 and Figure 19, page 142, in the Appendix illustrate that the teacher motivation and teacher evaluation and the teacher motivation and student evaluation achieved the highest mean scores when visual stimuli are used. The student motivation and student evaluation is the most effective combination of the motivational source and evaluative locus when non-visual stimuli are used. An analysis of variance between the four treatment methods shows that in period 4 the .01 level of significance is achieved. This analysis of variance is shown on Table LXXXII, page 162, in the Appendix.

Analysis of Variance for the Period to Period Dynamics of In-Class Product on the Dependent Variable: Total Variable Scores

Significance at the .001 level was found between the means of the six periods of this variable. This is shown on Table XLVIII, page 131, in the Appendix. The mean score ranks shown on Table XXXIV indicate that the nature of the stimuli is very important. The pattern of higher means for the periods of visual stimuli over non-visual stimuli also indicates that learning was taking place.

TABLE XXXIV

MEANS OF THE PERIOD TO PERIOD DYNAMICS OF
THE IN-CLASS PRODUCT ON THE DEPENDENT
VARIABLE: TOTAL VARIABLE SCORES

Means Ranked in Ascending Order	
Periods	Means
2	4.0110
4	4.1070
6	4.2660
1	4.7270
3	5.0250
5	5.0680

Table LX, page 151 and Figure 20, page 143, in the Appendix show that teacher motivation and teacher evaluation and the teacher motivation and student evaluation attain relatively high mean scores during the periods in which visual stimuli are used i.e. periods one, three and five. The student motivation and student evaluation treatment achieves the highest mean scores for the non-visual stimuli periods except for period six when the teacher motivation and teacher evaluation is slightly higher.

Analysis of Variance for the Period to Period Dynamics of the Out-of-Class Product on the Dependent Variable: Originality

No significant difference is found between the six class periods for this variable. This is partly explained on Table XXXV, page 87, which shows the rank order of the six periods.

TABLE XXXV

MEANS OF THE PERIOD TO PERIOD DYNAMICS OF THE
OUT-OF-CLASS PRODUCT ON THE DEPENDENT
VARIABLE: ORIGINALITY

Means Ranked in Ascending Order	
Periods	Means
4	4.5550
2	4.6000
3	4.7680
1	4.9050
6	4.9140
5	4.9550

For the first time in this investigation a period with non-visual stimuli appears among the higher mean scores. Table XXXV shows period six with a mean score second only to period five.

Figure 21, page 144, in the Appendix illustrates why period six achieved the high mean that it did. The strength of the teacher motivation and teacher evaluation treatment is very noticeable, particularly in periods five and six. The treatment of student motivation and student evaluation is noticeably strong in periods one, two, three and four. This pattern appears to be unique to work that was completed outside of the experimental setting. Table LXI, page 152, in the Appendix also shows this pattern.

An analysis of variance shows that a significant difference exists between the four teaching methods for the variable when the drawings were made out-of-class. This analysis is shown on Tables LXXXIX, XCII, XCV, XCVIII, CI, CIV, in the Appendix.

Analysis of Variance for the Period to Period Dynamics for the
Out-of-Class Product on the Dependent Variable: Craftsmanship

As Table L, page 133, in the Appendix shows the .01 level of significance reached for this variable between the six periods of instruction. The rank order shown on Table XXXVI shows the relatively high mean score for period five of 5.645 and the low mean score of period two of 2.343. It may be observed that the

mean scores of this variable are generally higher than the scores for In-Class Process or In-Class Product.

TABLE XXXVI

MEANS OF THE PERIOD TO PERIOD DYNAMICS OF THE
OUT-OF-CLASS PRODUCT ON THE DEPENDENT
VARIABLE: CRAFTSMANSHIP

Means Ranked in Ascending Order	
Periods	Means
2	4.3730
4	4.5820
6	5.1050
3	5.2910
1	5.3550
5	5.6450

The high mean scores of the ranked class order is also shown on Figure 22, page 145, in the Appendix where the student motivation and student evaluation reach mean scores of 6.036 in period one, 6.455 in period three and 6.472 in period six. The only period in which student motivation and student evaluation did not have the highest mean is in period six. The teacher motivation and teacher evaluation achieve the second highest mean scores for this variable. Table LXII, page 152, in the Appendix also explains the relationship of the motivational and evaluation factors.

The analysis of variance computations between the four teaching strategies indicate that the .025 level of significance is reached during periods three and four and the .01 level is reached in period one and five. Tables XC, XCIII, XCVI, XCIX, CII and CV, in the Appendix illustrate the analysis of this variable.

Analysis of Variance for the Period to Period Dynamics of the Out-of-Class Product on the Dependent Variable: Over-all Aesthetic Value

Statistical significance is not found between the six periods for this variable. This is shown on Table LI, page 134, in the Appendix. The pattern of a non-visual stimuli period

achieving a mean high enough to be in the upper portion of the rank order of class periods is again shown for this variable. Table XXXVII shows this order and illustrates the small difference in the mean scores with period two having a mean score of 4.123 and period five with a mean score of 4.859.

TABLE XXXVII

MEANS OF THE PERIOD TO PERIOD DYNAMICS OF THE
OUT-OF-CLASS PRODUCT ON THE DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE

Means Ranked in Ascending Order	
Periods	Means
2	4.1230
4	4.2500
3	4.6730
6	4.7960
1	4.8140
5	4.8590

Figure 23, page 146 and Table LXIII, page 153, in the Appendix show that the student motivation and student evaluation treatment achieves higher mean scores than the other treatments in all of the periods except period six. Also, the analysis of variance computations of the four treatment groups in each period show that in period three and period four the treatments are different on the .01 and .05 level of probability. This statistic is shown on Tables XCVII and C in the Appendix.

Analysis of Variance for the Period to Period Dynamics for the Out-of-Class Product on the Dependent Variable: Total Variable Scores

No statistical significance is found between the six class periods for this variable. However, the rank order of the class periods indicates that the final period (period six) of the non-visual stimuli mean score ranks it in the upper three periods.

TABLE XXXVIII

MEANS OF THE PERIOD TO PERIOD DYNAMICS OF THE
OUT-OF-CLASS PRODUCT ON THE DEPENDENT
VARIABLE: TOTAL VARIABLE SCORES

Means Ranked in Ascending Order	
Periods	Means
2	4.4590
4	4.9800
3	4.3750
6	4.9210
1	5.0550
5	5.1520

Table LXIV, page 153 and Figure 24, page 147, in the Appendix show the teacher motivation and teacher evaluation and the student motivation and student evaluation as those treatments which achieve the highest mean scores. The mixed treatments, i.e. teacher motivation and student evaluation and the student motivation and teacher evaluation, have considerably low mean scores as compared to the other treatments.

CHAPTER IV

DISCUSSION

Introduction

To facilitate greater clarity in the interpretation of the statistical analyses, this discussion is divided into five sections, namely: (1) Judge Reliability and Correlation, (2) The Relationship of the Motivational Source and the Evaluative Locus to the Conditions of In-Class Process, In-Class Product and Out-of-Class Product, (3) The Relationship of the Motivational Source and the Evaluative Locus to the Period to Period Dynamics of Learning, (4) The Relationship of the Motivational Source and Evaluative Locus to Visual and Non-Visual Stimuli and (5) Summary.

Judge Reliability and Correlation

Five expert art judges made a total of 23,760 evaluations of the drawings that were completed in and outside the experimental classroom setting. As stated previously, the judgments were based on a scale with levels from two to nine developed by Getzels (22) to measure the dimensions of originality, craftsmanship and overall aesthetic value. A correlation above the .01 level was computed between the five judges and between the individual criteria. These statistics are found on Table I, page 45, Table II, page 46, and Table XL, page 122. These findings replicated the work previously reported by Gordon (23), Linderman (36), Beittel (6) and Frankston (21) in demonstrating that expert art judges can evaluate works of art for various criteria on a level which is statistically significant. The correlation of the expert art judges provided the statistical data from which the experimental analysis of the various factors was computed.

The Relationship of the Source of Motivation and the Evaluative Locus to the Conditions of In-Class Process, In-Class Product and Out-of-Class Product

A statistically significant difference is found to exist among the four experimental groups for the criterion craftsmanship on the .025 level under the condition of In-Class Process. As Table VI, page 52, indicates the teacher motivation and teacher evaluation treatment has the highest mean scores and represents

the most effective teaching strategy. Although the other variables under this condition do not reveal significant levels, the teacher motivation and teacher evaluation treatment appear to be effective. The mean scores of these variables are recorded on Tables IV, page 49, Table VIII, page 55 and Table X on page 57.

Statistical significance is also demonstrated among the four experimental groups for the variables, craftsmanship (.001), over-all aesthetic value (.01) and the total variable scores (.05) under the condition of In-Class Product. These statistics are demonstrated on Tables XIII, page 61, Table XV, page 64 and Table XVIII, page 68. Again it was shown that the teacher motivation and teacher evaluation is the most effective teaching strategy among the four experimental treatments. The one exception to this finding was recorded for the variable craftsmanship. This, however, did not appear to be a part of the trend recorded for the other variables under this condition.

The climates in which the four experimental groups worked represented environmental conditions similar to those described by Harold Anderson (2). The formal supportive setting seems to have played a significant role in helping the students produce art work in an atmosphere in which the teacher served as the main source of motivation and as the teaching locus of evaluation. In the formal classroom setting, the teacher motivation and teacher evaluation treatment seems to have been the most "responsive environment" in which the students created and, thus, reflected a higher rate of achievement. When the condition of Out-of-Class Product was analyzed, it was discovered that all of the criteria variables were statistically significant. The variable originality shows a significance on the .025 level; craftsmanship, over-all aesthetic value and total variable scores on the .001 level. The interesting aspect of this statistic is related to the motivational and evaluative treatment which appears to be superior under this condition. As Table XX, page 70, Table XXII, page 73, Table XXIV, page 75 and Table XXVI, page 78 illustrate the student motivation and student evaluation treatment appears higher than all of the other treatments. Since this finding is diametrically opposed to the findings of the In-Class Process and the In-Class Product conditions, it may be assumed that different forces were at work when the students were drawing under the conditions of Out-of-Class Product.

The forces which made the student motivation and student evaluation treatment superior appear to be related in various ways to the concepts that have resulted from the research of Calvin Taylor (53) Carl Rogers (47) and Kenneth Beittel (6) in evaluation.

Not only did the students under the student motivation and student evaluation treatment have to provide their own visual and non-visual stimuli, but they also gained experience in developing their own evaluations. As Taylor (53) has illustrated, the student by using "process self-reflection" can conceptualize himself in action through constructing a process strategy plan. This self-reflective process may answer some of the questions as to why the student motivated and student evaluative groups did better work. The experimental findings of Beittel (6), which were reported earlier, also indicate that learners functioning as "self-governing and self-correcting systems" do cause significant differences in art quality, and as the condition of Out-of-Class Product demonstrates can lead to the product of superior work. In making a comparison of the three environmental conditions, the condition of Out-of-Class Product demonstrates the highest mean scores. This finding appears to demonstrate that students, working uninhibited and at their own speed, may have greater opportunity to develop art work of a higher quality.

The Relationship of the Motivational Source and Evaluative Locus to the Period to Period Dynamics of Learning

The statistical analysis of the period to period dynamics illustrates that for the conditions of In-Class Process and In-Class Product a significant level of difference is achieved. The consistency of this pattern appears to be caused because of the range of mean scores that existed between the periods when visual stimuli were used (periods one, three and five) and when non-visual stimuli were used (periods two, four and six). A comparison of these mean scores for each period was shown on Tables XXVII through XXXVIII in Chapter III. As the period to period dynamics tables illustrate the rank order indicates that when particular stimuli are used mean scores increase with each class period. For the most part the pattern of mean gains is periods two, four and six and then periods one, three and five. This indicates that improvement was taking place and it may be inferred from this data that learning was taking place.

An examination of Figures 13 through 21 found on pages 136 to 144, in the Appendix, indicates that the relationship of the motivational source to the evaluative locus follows a definite pattern of superior treatment. Almost without exception in the periods when visual stimuli were used, students under the treatment of teacher motivation and teacher evaluation did work which received high scores for their drawings. The periods in which non-visual stimuli were used showed the student motivation and student

evaluation treatment to be the most effective. This finding may be related to the results of recent research conducted by E. Paul Torrance (59). His studies have demonstrated that students learn best when they are given a chance to learn in ways best suited to their motivations and abilities. This indicates that when teachers change their ways of teaching in significant ways, different groups of students become the higher achievers. The concept that one method of teaching or a particular form of stimuli may consistently be of superior value appear to be brought into considerable doubt. On the basis of this finding, it does appear to be too early to define theoretical constructs which will offer meaningful methodological direction to the teachers of art.

The Relationship of the Source of Motivation and the Evaluative Locus to the Visual and Non-Visual Stimuli

As a result of the statistical analysis, it was found that significance on the .001 level existed between the visual and non-visual stimuli for the conditions of In-Class Process and In-Class Product. This significance, based on the judged criteria scores of originality, craftsmanship, over-all aesthetic value and total variable scores, indicates that, in terms of the conditions of In-Class Process and In-Class Product, visual stimuli produce the highest mean scores. The motivation x stimuli interaction is also significant for the judgment variables under the conditions of In-Class Process and In-Class Product. This finding illustrates the importance of the teacher directed motivation in the production of higher mean scores in learning. The summary table on page 107, indicates how the two levels of stimuli and the interaction of the motivation and stimuli are related. The relationship of the motivation x evaluation x stimuli interaction, however, does not show any degree of statistical significance and it may be concluded that no combination of motivation source or evaluative locus can be considered of a superior nature for both the visual and non-visual stimuli. Under the conditions of In-Class Process and In-Class Product it is concluded that the nature of the stimuli greatly influenced the effectiveness of the teaching treatment. For the most part, the teacher motivation and teacher evaluation is high for visual stimuli and the student motivation and student evaluation is high for the non-visual stimuli.

When the condition of Out-of-Class Product was examined, the visual stimuli again proved to be significantly higher than the non-visual for three of the four criteria variables. As Figures 21 through 24, pages 144 to 147 illustrate the student motivation and student evaluative treatment appears to be superior

to the other treatments in all of the periods whether the stimuli were visual or non-visual. However, the motivation x evaluation x stimuli interaction does not show any statistical significance and, thus, it is concluded that none of the teaching treatments may be considered superior in terms of the two levels of stimuli.

Summary

The questions raised by this study were partially answered through the use of the statistical procedures and experimental designs previously described. Although clean cut answers did not evolve, evidence is presented which demonstrates that difference in the source of the motivational and the evaluative locus do have a significant effect on the degree of learning that takes place under the influence of various environmental conditions.

The pattern of teacher motivation and teacher evaluation appears to be the most effective treatment in terms of the conditions of In-Class Process and In-Class Product drawing. This effectiveness is contingent to the stimuli being visual. However, the student motivation and student evaluation treatment appears to be the most effective strategy when non-visual stimuli are used under the conditions of In-Class Process and In-Class Product. However, when work is judged for the condition of Out-of-Class Product, the student motivation and student evaluation treatment is the most effective teaching method when both visual and non-visual stimuli are used.

The period to period dynamics clearly demonstrates that a pattern of greater mean scores appears for classes in which visual stimuli are used over those in which non-visual stimuli are used. Also, the four experimental groups showed progressively higher mean scores over the six week period. From this data, it is concluded that learning was fostered.

Although visual stimuli proved to be superior to non-visual stimuli when judged for originality, craftsmanship and over-all aesthetic value, it is not statistically established that any of the four experimental treatments are superior to the others in terms of the environmental conditions and the stimuli.

It is the major conclusion of this study that: (1) in terms of the environmental conditions and the criterion variables, significantly different scores are shown among the experimental groups, (2) in terms of the environmental conditions and the criterion variables, significantly different scores are shown

among the experimental groups for specific periods of instruction, and (3) a significant difference is not found to exist between the four experimental treatments and the two levels of stimuli.

CHAPTER V

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Conclusions

The following conclusions are presented as they relate to the original questions which this investigation raised, the three null-hypotheses, the findings of the computations of the analyses of variance and the stated limitations of the investigation.

As a result of the investigation which compared the total scores of originality, craftsmanship and over-all aesthetic value among the four experimental treatment groups, it is concluded that:

1. The interrelationship of the source of motivation and evaluative locus on the four experimental teaching treatments and the conditions under which the students learned are statistically significantly different in terms of the judged scores on the dependent variables originality, craftsmanship and over-all aesthetic value.
 - a. The conditions of In-Class Process and In-Class Product show that significant difference occur among the four experimental teaching treatments. The higher mean scores, which indicated a more effective treatment, show the teacher motivation and teacher evaluation and the teacher motivation and student evaluation to be significantly higher when visual stimuli is used. The student motivation and student evaluation is the most effective treatment when non-visual stimuli are used.
 - b. The condition of Out-of-Class Product is highly statistically significant for the interaction between the motivational source and the evaluative locus. The analyses clearly demonstrates that the environment in which the drawings were made had a great influence on the judge mean scores e.g. originality, craftsmanship and over-all aesthetic value. The interaction with the highest mean scores is the student motivation and student evaluation. This combination of the motivational source and evaluative locus is statistically higher than the other treatments when either visual or non-visual stimuli are used.

2. The interrelationship of the direction of the motivational source and evaluative locus on the four experimental teaching treatments, the conditions under which the students learned and the periods in which the learning took place are statistically significantly different in terms of the judged scores on the dependent variables originality, craftsmanship and over-all aesthetic value.
 - a. Under the conditions of In-Class Process and In-Class Product, a very significant degree of difference is shown to exist between the direction of the various motivational sources and evaluative loci. The interaction of teacher motivation and student evaluation is statistically significant when visual stimuli are used. The student motivation and student evaluative treatment achieves the highest mean scores and is statistically significant when non-visual stimuli are used.
 - b. When the students are drawing under the conditions of Out-of-Class Product, statistical significance between the period to period dynamics is found for the variable craftsmanship. The mean scores of this variable prove to be the highest of any found throughout the entire investigation. The treatment which scored the highest mean scores is the student motivation and student evaluation combination. The effectiveness of this strategy is demonstrated for both the visual and non-visual stimuli.
3. The interrelationship of the direction of the motivational source and evaluative locus on the four experimental teaching treatments, the conditions under which the students learned and whether the stimuli was visual or non-visual show no statistically significant difference in the mean scores of the dependent variables originality, craftsmanship and over-all aesthetic value.
 - a. The motivational and evaluative interaction of the four teaching treatments show no statistically significant differences when they are considered in terms of visual or non-visual stimuli. Under all of the conditions e.g. In-Class Process, In-Class Product and Out-of-Class Product, a pattern of high to low scores is demonstrated, however, none of the experimental combinations of the source of motivation and the evaluative locus emerged as a superior treatment under

both visual and non-visual subject matter. This fact may explain why the motivation x evaluation x stimuli interaction of the main effects does not prove to be statistically significant.

- b. A high degree of significant difference is found between the mean scores of work that is completed under the influence of visual or non-visual stimuli. However, as has been explained above, this difference between the two types of stimuli does not significantly effect the various experimental treatments in a significant way.

Implications of This Investigation for Art Education

One of the first implications that must be drawn is in relation to the population and the student who served as subjects in this investigation. Of a possible 150 students who were available in the original population, 44 students were randomly selected to serve in four individual experimental groups. Thus, the findings of this investigation must be thought of in terms of the student sample which was drawn from a slightly larger population of a small (1200 students) eastern liberal arts college.

The areas this investigation analyzed, it was believed, probed the teacher-learning experience and, thus, may be of both theoretical and practical significance. The statistically significant levels of probability that were achieved in the analyses of variance computations indicate that various combinations of the motivational source and the evaluative locus are more effective than others. The implications of the findings of this investigation may be of considerable use to art teachers to the degree that they can gain a greater understanding of the motivational and evaluative origins in the teacher of drawing.

The pattern of teacher motivation and teacher evaluation appears to be the most effective treatment in terms of the conditions of In-Class Process and In-Class Product drawings. This effectiveness is contingent on the stimuli being visual in nature. However, the student motivation and student evaluation strategy is the most effective treatment when non-visual stimuli were used under the identical environmental conditions. The implications these findings may have for art education are that students who are members of a formal art teaching-learning situation, when the stimuli are visual in nature, will experience greater levels of judged achievement in originality, craftsmanship and over-all aesthetic value than students who do not learn under conditions

of outer-directed motivation and evaluation. Conversely, students working under the same conditions who employ visual stimuli and are self-directed and self-evaluative will experience a higher level of learning than the other combinations of motivation and evaluative treatment outside of the formal classroom setting.

Another finding of this investigation that may have considerable educational value, is the significant difference that is found between drawings that are completed in the classroom and those that are completed outside of the classroom setting. The In-Class Process and In-Class Product conditions mentioned above, shows the teacher motivation and teacher evaluation treatment to be most effective when visual stimuli are used, and the student motivation and student evaluation treatment to be the most effective when non-visual stimuli are used. However, drawings completed outside of the classroom, under the conditions of Out-of-Class Product, the treatment of student motivation and student evaluation is the most effective treatment for both the visual and non-visual stimuli. The implications of this finding seem to indicate that students who have experienced greater classroom freedom in an environment of formal learning may be better prepared to develop their drawings in environments which do not represent formal settings. The treatment of teacher motivation and teacher evaluation, on the other hand, may not provide students with this very valuable condition.

Another consideration that appears to have important implications for art education, is in the area of the period to period dynamics and the role of visual and non-visual stimuli. The most obvious finding in this investigation is that visual stimuli are judged significantly higher than non-visual stimuli. This perhaps indicates that the average student has a great need to visually relate to something tangible, something observable. It also may be an indication that students have not been challenged to develop their ability to create from their "mind's eye." Thus, they find themselves inadequately prepared to meet this challenge. Another factor that also may be involved is perhaps related to time. The student who is working outside of the classroom may be able to spend as much time as he feels he needs to complete his drawings. On the other hand, the pressures, anxieties and distractions of the classroom may serve as inhibitors to the thought processes that are necessary for non-visual mental creations.

The period to period dynamics clearly demonstrates that a pattern of greater mean scores appear for visual over non-visual stimuli. Also the four experimental teaching treatments show progressively higher mean scores over the six week period of the study. From these data, it is inferred that learning was fostered.

The degree of amplitude that each treatment achieved is the significant feature and educationally important aspect of this comparative study.

One of the most interesting aspects of this investigation is related to the high degree of correlation that was achieved between the judges on the three criteria i.e. originality, craftsmanship and over-all aesthetic value. This correlation demonstrates that judges can be trained to render accurate and reliable value judgments to artistically descriptive terminology. Also the fact that agreement in judgments can be extended to include various environmental conditions i.e. In-Class Process, In-Class Product and Out-of-Class Product, adds a very useful dimension to the research evaluative scales now available to contemporary art educators. The continued development of accurately describable evaluative scales and terminologies will contribute much to the improvement of research in art education and hence the development of theory.

One of the goals of contemporary art education has been to develop and nurture to the fullest extent that creative birthright of each student. Thus, but its very nature, art education has been chiefly concerned with the process of creativity and aesthetics. By developing students who are capable of utilizing self-direction and self-reflection, the highest levels of creative development may be fostered in learners. As this investigation indicates, the teacher motivation and teacher evaluation procedure obtains the highest scores on the finished product judgments, however, the importance may not be the measure of how successful the student was in the classroom, but rather how successful he will be when he is no longer in the educational setting. Bearing this concept in mind, it seems that the need for greater opportunity for self-directed motivation and opportunities for self-reflective evaluation may form one of the most valuable and meaningful ingredients in each student's learning experience. The role of the classroom teacher, in the final analysis, may be one of creating a supportive atmosphere in the learning environment and serving as a resource person with whom the student can interact as he finds the need to.

Recommendations for Further Research

Since motivation and evaluation are vital elements in all teaching-learning situations, the need for continued research into the nature of the learning process is of paramount importance. Continuing research, by providing answers to many questions related

to motivation and evaluation, will supply teachers on all educational levels with the basic material for the development of new and better theoretical constructs and teaching methodologies. Thus, through the additional clues which empirical investigations provide, many teachers will become better facilitators of learning.

As a result of this investigation, the following recommendations for further research are suggested.

1. Further research with similar populations using the same variables and factors needs to be conducted in other educational environments and on different educational levels.
2. The study of the mean gains and losses of the four experimental teaching treatments over a longer period of instruction needs to be conducted using either visual or non-visual stimuli.
3. Further study, using the same instruments, to determine what effect two or three dimensional art media will have on the student work under the four experimental teaching treatments needs to be investigated.
4. Further research in which the students personality, socio-economic background, experience and other personality characteristics can be considered in terms of the four experimental teaching treatments, the criteria variables, and various environmental conditions needs to be conducted.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Restatement of the Problem

The objective of this study was to discover if a particular combination or variation of the direction of the sources of motivation and of evaluative loci would provide a significantly superior strategy for the teaching of the visual arts. In the belief that art education offers numerous opportunities for college students to utilize original thinking, develop craftsmanship and cultivate aesthetic sensitivities, this study sought to investigate the effect that various inner-directed and outer-directed strategies of motivation and evaluation had on the visual art work of college students. This study also examined the work completed in the art classroom and work completed outside of the formal experimental setting. The effect of visual and non-visual stimuli was another issue to which this research addressed itself.

As one notes the lack of empirical research in which the interrelationship of the motivational source and evaluative locus of art teaching have been examined, the need for the development of this type of data became apparent. Through an examination of the teaching-learning process within the framework of a controlled classroom environment, new answers and insights were sought from which theoretical constructs could be developed. These findings may serve as guides for more effective teaching of the visual arts in the classroom, and add a modest contribution to theory development.

Summary of the Experimental Design and Procedure

This experiment was conducted over a six week period during the 1966-67 school year at Moravian College, Bethlehem, Pennsylvania. The population sample was randomly selected from a larger student population (150). These learners, non-art students, had elected studio art courses available in the curriculum. Forty-four subjects were assigned to four treatment groups of eleven students each. This enabled the investigation to be a balanced design.

Each group met in a large well lighted art studio for 90 minutes each week. At each class meeting, three drawings were completed for a total of 18 over the six week period. All of the

drawings were drawn on 12" x 18" white paper. Each student spent approximately 20 to 25 minutes developing each drawing. One drawing was also completed outside of class each week. They were produced by using the same stimuli that had been used during the previous class session.

The experimental groups represented four different combinations of motivational and evaluative treatments. These two levels of motivation and evaluation were used as independent variables. A better understanding of each of the four groups will be gained through an explanation of each.

The first group used the teacher motivation and teacher evaluation treatment. In this group, the teacher provided the project, the drawing supplies and instruction on the use of the art materials. At the conclusion of each period, the teacher gave an individual evaluation of all the drawings completed during the period.

The second group used the teacher motivation and student evaluation treatment. In this group, the teacher provided the project, the drawing supplies and instruction on the use of the art materials. At the conclusion of each drawing session, the student was asked to evaluate his own work and return it the following week. These evaluations, which were only for the student's use, were written on the reverse side of each drawing.

The third experimental teaching group used the student motivation and teacher evaluation treatment. Under this treatment, the student developed his own ideas into finished drawings. Drawing materials were chosen by the student from a wide assortment and used in any way the student wished. The source of motivation was with the learner. At the end of each session, the teacher evaluated all of the student work on an individual basis. The evaluations were verbal in nature. The student was not asked to evaluate his own work.

The fourth experimental group made their drawings using the student motivation and student evaluation treatments. Under this method, the student developed his own drawings. The materials were chosen by the student from a wide variety of media that was made available. Each student used the materials in any way he wished. No formal instruction was provided by the teacher. At the end of each session, the student was asked to evaluate his own work and return it the following week. All evaluations were recorded on the reverse side of each drawing.

The stimuli for the first, third and fifth sessions of each group were visual in nature. Students who were teacher motivated were asked to interpret a still-life arrangement which the teacher had constructed. Students who were in the groups that were student motivated were asked to bring their own objects and develop their own still-life drawings. During the second, fourth and sixth periods of the study, non-visual stimuli were used. Students who were teacher motivated were given a poem to read and use as a motivation. Subjects who were student motivated were asked to use poems, stories or plays which they wished as an inspiration for their drawings.

During each session, black and white Polaroid photographs were taken of all of the work created during the period. The first drawing made by each student during the first 20 to 30 minutes was photographed at five minute intervals to show the process sequence. The two other drawings that were completed during the period were also photographed when they were finished. Also, the work completed outside of the classroom was recorded on black and white Polaroid film. The photographs were mounted on coded 12" x 18" pieces of white drawing paper and prepared for use by the expert art judges. Panels also were used for the teacher evaluation treatment as a point of reference for the teacher's comments. A total of 792 panels were used to represent the In-Class Process, In-Class Product and Out-of-Class Product conditions of this investigation.

Summary of the Evaluation of the Drawings

The dependent variables of this study were based on the externally judged scores of the five expert art judges. The criteria employed were originality, craftsmanship and over-all aesthetic value. Three judging sessions were used to judge work done in the classroom, i.e. In-Class Process and In-Class Product, and work completed outside of the classroom i.e. Out-of-Class Product. The conditions under which the judgments took place were the same for each session. All of the work to be judged was randomly placed on tables in a well lighted room.

The evaluation scale which the judges used was based on an eight point continuum: two points for very low quality drawings to nine points for excellent work. Each drawing was rated for originality, craftsmanship and over-all aesthetic value for work completed inside and outside of the classroom. All of the judgments, which totaled 23,760, were made from the black and white photographs of the original drawings that were pasted on the 12" x 18" paper panels. Each panel was coded and each judge recorded

his judgments in a portion of the panel that was folded over, thus, all of the judgments were confidential. At the conclusion of each judging session, the judges scores were transferred to a data form sheet and prepared for computation.

Summary of the Analysis of the Data

In order to determine the degree of agreement that existed between the five judges' ratings, the coefficient of correlations were computed between the scores of each of the five judges. A correlation was also run to determine the degree of intercorrelation that existed between the three dependent variables: originality, craftsmanship and over-all aesthetic value. The findings of both of these tests indicated that the judges' scores were correlated beyond the .01 level of significance. Also the intercorrelation between the judged criteria was found to be above the .01 level. The computation program used for these runs was the symmetric correlation program 11.3.003 which was developed by M. E. Roberts and A. T. Wink (46). The analysis of variance was the computational method used for most of the statistical analyses of this investigation. Three different analyses of variance were computed in an effort to test the three hypotheses which had been formulated. A summary of the findings of these analyses can be seen on Table XXXIX, page 101.

Consideration of the Null-Hypothesis

The three variables which were used as criteria for the expert art judges were originality, craftsmanship and over-all aesthetic value. The scores that were given to these criteria were used to determine whether a significant difference occurred between the four teacher treatments. As the hypotheses stated, the scores based on the criterion variables were considered under the conditions of In-Class Process, In-Class Product and Out-of-Product when visual and non-visual stimuli were used. The hypotheses were tested by the use of three analysis of variance computations and on the basis of these results were either rejected or not rejected. The .05 level of probability was accepted as being statistically significant for the results computed for this investigation. A summary of the three analysis of variance computations may be found for hypotheses 1, 2 and 3 on Table XXXIX, page 107.

TABLE XIX

SUMMARY OF THE RESULTS OF THE THREE ANALYSES OF VARIANCE

	IN-CLASS PROCESS				IN-CLASS PRODUCT				OUT-OF-CLASS PRODUCT			
	Originality	Craftsmanship	Over-all Aesthetic Value	Total	Originality	Craftsmanship	Over-all Aesthetic Value	Total	Originality	Craftsmanship	Over-all Aesthetic Value	Total
MOTIVATION: Teacher/Student	.025				.01							
EVALUATION: Teacher/Student												
STIMULI: Visual/Non-Visual	.001	.001	.001	.001	.001	.001	.001	.001	.001	.05	.025	
PERIOD DYNAMICS:	.01	.001	.001	.001	.001	.001	.001	.001	.01			
ONE Motivation x Evaluation												
TWO Motivation x Evaluation												
THREE Motivation x Evaluation										.05	.01	
FOUR Motivation x Evaluation						.01	.01			.05	.05	
FIVE Motivation x Evaluation						.05				.01		
SIX Motivation x Evaluation												
MOTIVATION X EVALUATION	.025	.025	.01	.01		.001	.01	.05	.025	.001	.001	.001
MOTIVATION X STIMULI	.025	.05			.01	.05	.001	.01				
EVALUATION X STIMULI												
MOTIVATION X EVALUATION X STIMULI												
MOTIVATION X PERIOD DYNAMICS												
EVALUATION X PERIOD DYNAMICS			.05		.05			.025				
STIMULI X PERIOD DYNAMICS												
MOTIVATION X EVALUATION X PERIOD DYNAMICS												

Hypothesis 1

There will be no significant difference in the total scores for originality, craftsmanship and over-all aesthetic value among the experimental groups in relation to: (A) In-Class Process, (B) In-Class Product, (C) Out-of-Class Product. Hypotheses 1A, 1B and 1C are rejected.

Hypothesis 2

There will be no significant difference in the total scores for originality, craftsmanship and over-all aesthetic value among the four experimental groups for specific periods of instruction under the conditions of (A) In-Class Process, (B) In-Class Product, (C) Out-of-Class Product. Hypotheses 2A, 2B and 2C are rejected.

Hypothesis 3

There will be no significant difference in the total scores for originality, craftsmanship and over-all aesthetic value among the experimental groups when either visual or non-visual stimuli are used. Hypothesis 3 is not rejected.

Major Conclusions of the Investigation

The following conclusions are presented as they relate to the original questions which this investigation raised, the three null-hypotheses, the findings of the computations of the analyses of variance and the stated limitations of the investigation.

As a result of the investigation which compared the total scores of originality, craftsmanship and over-all aesthetic value among the four experimental treatment groups, it is concluded that:

1. The interrelationship of the source of motivation and evaluative locus on the four experimental teaching treatments and the conditions under which the students learned are statistically significantly different in terms of the judged scores on the dependent variables originality, craftsmanship and over-all aesthetic value.
 - a. The conditions of In-Class Process and In-Class Product show that significant difference occur among the four experimental teaching treatments. The higher mean scores, which indicated a more effective treatment, show the teacher motivation and teacher evaluation and the teacher motivation and student evaluation to be

significantly higher when visual stimuli is used. The student motivation and student evaluation is the most effective treatment when non-visual stimuli are used.

- b. The condition of Out-of-Class Product is highly statistically significant for the interaction between the motivational source and the evaluative locus. The analyses clearly demonstrates that the environment in which the drawings were made had a great influence on the judge mean scores e.g. originality, craftsmanship and over-all aesthetic value. The interaction with the highest mean scores is the student motivation and student evaluation. This combination of the motivational source and evaluative locus is statistically higher than the other treatments when either visual or non-visual stimuli are used.
2. The interrelationship of the direction of the motivational source and evaluative locus on the four experimental teaching treatments, the conditions under which the students learned and the periods in which the learning took place are statistically significantly different in terms of the judged scores on the dependent variables originality, craftsmanship and over-all aesthetic value.
 - a. Under the conditions of In-Class Process and In-Class Product, a very significant degree of difference is shown to exist between the direction of the various motivational sources and evaluative loci. The interaction of teacher motivation and student evaluation and the teacher motivation and student evaluation is statistically significant when visual stimuli are used. The student motivation and student evaluative treatment achieves the highest mean scores and is statistically significant when non-visual stimuli are used.
 - b. When the students are drawing under the conditions of Out-of-Class Product, statistical significance between the period to period dynamics is found for the variable craftsmanship. The mean scores of this variable prove to be the highest of any found throughout the entire investigation. The treatment which scored the highest mean scores is the student motivation and student evaluation combination. The effectiveness of this strategy is demonstrated for both the visual and non-visual stimuli.

3. The interrelationship of the direction of the motivational source and evaluative locus on the four experimental teaching treatments, the conditions under which the students learned and whether the stimuli was visual or non-visual show no statistically significant difference in the mean scores of the dependent variables originality, craftsmanship and over-all aesthetic value.
 - a. The motivational and evaluative interaction of the four teaching treatments show no statistically significant differences when they are considered in terms of visual or non-visual stimuli. Under all of the conditions e.g. In-Class Process, In-Class Product and Out-of-Class Product, a pattern of high to low scores is demonstrated, however, none of the experimental combinations of the source of motivation and the evaluative locus emerged as a superior treatment under both visual and non-visual subject matter. This fact may explain why the motivation x evaluation x stimuli interaction of the main effects does not prove to be statistically significant.
 - b. A high degree of significant difference is found between the mean scores of work that is completed under the influence of visual or non-visual stimuli. However, as has been explained above, this difference between the two types of stimuli does not significantly effect the various experimental treatments in a significant way.

Implications of This Investigation for Art Education

One of the first implications that must be drawn is in relation to the population and the student who served as subjects in this investigation. Of a possible 150 students who were available in the original population, 44 students were randomly selected to serve in four individual experimental groups. Thus, the findings of this investigation must be thought of in terms of the student sample which was drawn from a slightly larger population of a small (1200 students) eastern liberal arts college.

The areas this investigation analyzed, it was believed, probed the teacher-learning experience and, thus, may be of both theoretical and practical significance. The statistically significant levels of probability that were achieved in the analyses of variance computations indicate that various combinations of the

motivational source and the evaluative locus are more effective than others. The implications of the findings of this investigation may be of considerable use to art teachers to the degree that they can gain a greater understanding of the motivational and evaluative origins in the teacher of drawing.

The pattern of teacher motivation and teacher evaluation appears to be the most effective treatment in terms of the conditions of In-Class Process and In-Class Product drawings. This effectiveness is contingent on the stimuli being visual in nature. However, the student motivation and student evaluation strategy is the most effective treatment when non-visual stimuli were used under the identical environmental conditions. The implications these findings may have for art education are that students who are members of a formal art teaching-learning situation, when the stimuli are visual in nature, will experience greater levels of judged achievement in originality, craftsmanship and over-all aesthetic value than students who do not learn under conditions of outer-directed motivation and evaluation. Conversely, students working under the same conditions who employ visual stimuli and are self-directed and self-evaluative will experience a higher level of learning than the other combinations of motivation and evaluative treatment outside of the formal classroom setting.

Another finding of this investigation that may have considerable educational value, is the significant difference that is found between drawings that are completed in the classroom and those that are completed outside of the classroom setting. The In-Class Process and In-Class Product conditions mentioned above, shows the teacher motivation and teacher evaluation treatment to be most effective when visual stimuli are used, and the student motivation and student evaluation treatment to be the most effective when non-visual stimuli are used. However, drawings completed outside of the classroom, under the conditions of Out-of-Class Product, the treatment of student motivation and student evaluation is the most effective treatment for both the visual and non-visual stimuli. The implications of this finding seem to indicate that students who have experienced greater classroom freedom in an environment of formal learning may be better prepared to develop their drawings in environments which do not represent formal settings. The treatment of teacher motivation and teacher evaluation, on the other hand, may not provide students with this very valuable condition.

Another consideration that appears to have important implications for art education, is in the area of the period to period dynamics and the role of visual and non-visual stimuli. The most obvious finding in this investigation is that visual stimuli are

judged significantly higher than non-visual stimuli. This perhaps indicates that the average student has a great need to visually relate to something tangible, something observable. It also may be an indication that students have not been challenged to develop their ability to create from their "mind's eye." Thus, they find themselves inadequately prepared to meet this challenge. Another factor that also may be involved is perhaps related to time. The student who is working outside of the classroom may be able to spend as much time as he feels he needs to complete his drawings. On the other hand, the pressures, anxieties and distractions of the classroom may serve as inhibitors to the thought processes that are necessary for non-visual mental creations.

The period to period dynamics clearly demonstrates that a pattern of greater mean scores appear for visual over non-visual stimuli. Also the four experimental teaching treatments show progressively higher mean scores over the six week period of the study. From these data, it is inferred that learning was fostered. The degree of amplitude that each treatment achieved is the significant feature and educationally important aspect of this comparative study.

One of the most interesting aspects of this investigation is related to the high degree of correlation that was achieved between the judges on the three criteria i.e. originality, craftsmanship and over-all aesthetic value. This correlation demonstrates that judges can be trained to render accurate and reliable value judgments to artistically descriptive terminology. Also the fact that agreement in judgments can be extended to include various environmental conditions i.e. In-Class Process, In-Class Product and Out-of-Class Product, adds a very useful dimension to the research evaluative scales now available to contemporary art educators. The continued development of accurately describable evaluative scales and terminologies will contribute much to the improvement of research in art education and hence the development of theory.

One of the goals of contemporary art education has been to develop and nurture to the fullest extent that creative birthright of each student. Thus, by its very nature, art education has been chiefly concerned with the process of creativity and aesthetics. By developing students who are capable of utilizing self-direction and self-reflection, the highest levels of creative development may be fostered in learners. As this investigation indicates, the teacher motivation and teacher evaluation procedure obtains the highest scores on the finished product judgments, however, the importance may not be the measure of how successful the student

was in the classroom, but rather how successful he will be when he is no longer in the educational setting. Bearing this concept in mind, it seems that the need for greater opportunity for self-directed motivation and opportunities for self-reflective evaluation may form one of the most valuable and meaningful ingredients in each student's learning experience. The role of the classroom teacher, in the final analysis, may be one of creating a supportive atmosphere in the learning environment and serving as a resource person with whom the student can interact as he finds the need to.

Recommendations for Further Research

Since motivation and evaluation are vital elements in all teaching-learning situations, the need for continued research into the nature of the learning process is of paramount importance. Continuing research, by providing answers to many questions related to motivation and evaluation, will supply teachers on all educational levels with the basic material for the development of new and better theoretical constructs and teaching methodologies. Thus, through the additional clues which empirical investigation provide, many teachers will become better facilitators of learning.

As a result of this investigation, the following recommendations for further research are suggested.

1. Further research with similar populations using the same variables and factors needs to be conducted in other educational environments and on different educational levels.
2. The study of the mean gains and losses of the four experimental teaching treatments over a longer period of instruction needs to be conducted using either visual or non-visual stimuli.
3. Further study, using the same instruments, to determine what effect two or three dimensional art media will have on the student work under the four experimental teaching treatments needs to be investigated.
4. Further research in which the students personality, socio-economic background, experience and other personality characteristics can be considered in terms of the four experimental teaching treatments, the criteria variables, and various environmental conditions needs to be conducted.

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APPENDIX

TABLE XL
 SYMMETRIC CORRELATION MATRIX OF JUDGE AGREEMENT AND THE
 INTERCORRELATION OF THE JUDGED CRITERIA
 N=1320

		ORIGINALITY					CRAFTSMANSHIP				
	Judge A	Judge B	Judge C	Judge D	Judge E	Judge Total	Judge A	Judge B	Judge C	Judge D	Judge E Total
Judge B	0.560										
Judge C	0.688	0.593									
Judge D	0.570	0.518	0.579								
Judge E	0.527	0.570	0.542	0.476							
Total	0.829	0.815	0.840	0.765	0.781						
Judge A	0.616	0.660	0.575	0.474	0.629	0.738					
Judge B	0.426	0.661	0.478	0.420	0.637	0.657	0.670				
Judge C	0.502	0.613	0.649	0.480	0.678	0.728	0.747	0.715			
Judge D	0.388	0.491	0.424	0.488	0.587	0.592	0.592	0.588	0.660		
Judge E	0.463	0.552	0.486	0.411	0.843	0.691	0.677	0.663	0.709	0.653	
Total	0.563	0.697	0.614	0.530	0.788	0.798	0.868	0.849	0.896	0.805	0.864
Judge A	0.648	0.673	0.605	0.533	0.647	0.774	0.830	0.656	0.723	0.556	0.659
Judge B	0.472	0.773	0.531	0.490	0.643	0.729	0.657	0.764	0.662	0.577	0.648
Judge C	0.428	0.521	0.604	0.394	0.640	0.645	0.615	0.619	0.812	0.557	0.653
Judge D	0.411	0.556	0.438	0.536	0.591	0.629	0.594	0.590	0.627	0.747	0.599
Judge E	0.451	0.557	0.499	0.448	0.865	0.706	0.631	0.640	0.677	0.607	0.855
Total	0.582	0.739	0.646	0.573	0.813	0.838	0.802	0.784	0.842	0.723	0.820
											0.928

TABLE XL (continued)

	Judge A	Judge B	Judge C	Judge D	Judge E
Judge B					
Judge C					
Judge D					
Judge E					
Total					
Judge A					
Judge B					
Judge C					
Judge D					
Judge E					
Total					
Judge A	0.684				
Judge B	0.594	0.591			
Judge C	0.622	0.610	0.539		
Judge D	0.640	0.647	0.657	0.614	
Judge E	0.855	0.847	0.815	0.798	0.854
Total					

TABLE XLI

ANALYSIS OF VARIANCE FOR THE IN-CLASS PROCESS ON THE
DEPENDENT VARIABLE: ORIGINALITY
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	9.8524	9.8524	6.05	.025
EVALUATION: Teacher/Student	1	0.8985	0.8985	----	----
MOTIVATION X EVALUATION	1	1.8664	1.8664	----	----
PERIOD DYNAMICS	5	30.5560	6.1112	3.68	.01
MOTIVATION X PERIOD DYNAMICS	5	16.0757	3.2151	----	----
EVALUATION X PERIOD DYNAMICS	5	4.0334	0.8067	----	----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	7.4760	1.4952	----	----
Within	240	399.0695	1.6628		
Total		469.8379			

TABLE XLII

ANALYSIS OF VARIANCE FOR THE IN-CLASS PROCESS ON THE
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	2.9696	2.9696	-----	-----
EVALUATION: Teacher/Student	1	0.9218	0.9218	-----	-----
MOTIVATION X EVALUATION	1	10.5600	10.5600	5.52	.05
PERIOD DYNAMICS	5	73.1273	14.6255	7.56	.001
MOTIVATION X PERIOD DYNAMICS	5	12.5451	2.5090	-----	-----
EVALUATION X PERIOD DYNAMICS	5	4.5128	0.9026	-----	-----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	3.7432	0.7486	-----	-----
Within	240	464.4730	1.9353		
Total		572.8528			

TABLE XLIII

ANALYSIS OF VARIANCE FOR THE IN-CLASS PROCESS ON THE
DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	6.0607	6.0607	-----	-----
EVALUATION: Teacher/Student	1	0.1025	0.1025	-----	-----
MOTIVATION X EVALUATION	1	3.2295	3.2295	-----	-----
PERIOD DYNAMICS	5	56.3691	11.2738	5.77	.001
MOTIVATION X PERIOD DYNAMICS	5	24.9812	4.9962	2.56	.05
EVALUATION X PERIOD DYNAMICS	5	5.0376	1.0075	-----	-----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	6.9900	1.3980	-----	-----
Within	240	468.5822	1.9524		
Total		571.3528			

TABLE XLIV

ANALYSIS OF VARIANCE FOR THE IN-CLASS PROCESS ON THE
DEPENDENT VARIABLE: TOTAL VARIABLE SCORES
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	4.0009	4.0009	-----	-----
EVALUATION: Teacher/Student	1	0.1145	0.1145	-----	-----
MOTIVATION X EVALUATION	1	1.7184	1.7184	-----	-----
PERIOD DYNAMICS	5	50.6315	10.1263	5.86	.001
MOTIVATION X PERIOD DYNAMICS	5	16.8870	3.3774	-----	-----
EVALUATION X PERIOD DYNAMICS	5	3.7816	0.7563	-----	-----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	5.2627	1.0525	-----	-----
Within	240	414.9022	1.7288		
Total		497.2988			

TABLE XLV

ANALYSIS OF VARIANCE FOR THE IN-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: ORIGINALITY
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	9.9299	9.9299	8.57	.01
EVALUATION: Teacher/Student	1	0.0099	0.0099	-----	-----
MOTIVATION X EVALUATION	1	2.6397	2.6397	-----	-----
PERIOD DYNAMICS	5	38.6999	7.7400	6.51	.001
MOTIVATION X PERIOD DYNAMICS	5	13.9372	2.7874	2.35	.05
EVALUATION X PERIOD DYNAMICS	5	3.0155	0.6031	-----	-----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	7.1289	1.4258	-----	-----
Within	240	285.1369	1.1881		
Total		360.4977			

TABLE XLVI

ANALYSIS OF VARIANCE FOR THE IN-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=264

Source of Variation	Degrees of Freedom	Sums of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	0.1274	0.1274	-----	-----
EVALUATION: Teacher/Student	1	1.2001	1.2001	-----	-----
MOTIVATION X EVALUATION	1	23.7598	23.7598	14.71	.001
PERIOD DYNAMICS	5	61.3971	12.2794	7.43	.001
MOTIVATION X PERIOD DYNAMICS	5	9.0529	1.8106	-----	-----
EVALUATION X PERIOD DYNAMICS	5	4.4811	0.8962	-----	-----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	5.7739	1.1548	-----	-----
Within	240	395.8004	1.6492		
Total		501.5927			

TABLE XLVII

ANALYSIS OF VARIANCE FOR THE IN-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	3.2964	3.2964	-----	-----
EVALUATION: Teacher/Student	1	0.1230	0.1230	-----	-----
MOTIVATION X EVALUATION	1	12.7864	12.7864	9.06	.01
PERIOD DYNAMICS	5	46.6315	9.3263	6.43	.001
MOTIVATION X PERIOD DYNAMICS	5	21.0178	4.2036	2.90	.025
EVALUATION X PERIOD DYNAMICS	5	2.7038	0.5408	-----	-----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	5.3123	1.0625	-----	-----
Within	240	347.9111	1.4496		
Total		439.7823			

TABLE XLVIII

ANALYSIS OF VARIANCE FOR THE IN-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: TOTAL VARIABLE SCORES
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	3.5468	3.5468	-----	-----
EVALUATION: Teacher/Student	1	0.1273	0.1273	-----	-----
MOTIVATION X EVALUATION	1	6.8741	6.8741	5.38	.05
PERIOD DYNAMICS	5	48.0167	9.6033	7.29	.001
MOTIVATION X PERIOD DYNAMICS	5	14.0371	2.8074	-----	-----
EVALUATION X PERIOD DYNAMICS	5	2.5319	0.5064	-----	-----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	4.7389	0.9478	-----	-----
Within	240	316.3004	1.3179		
Total		396.1731			

TABLE XLIX

ANALYSIS OF VARIANCE FOR THE OUT-OF-CLASS PRODUCT OF
THE DEPENDENT VARIABLE: ORIGINALITY
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	0.0732	0.0732	-----	-----
EVALUATION: Teacher/Student	1	1.6386	1.6386	-----	-----
MOTIVATION X EVALUATION	1	13.4552	13.4552	6.40	.025
PERIOD DYNAMICS	5	6.5488	1.3098	-----	-----
MOTIVATION X PERIOD DYNAMICS	5	6.9560	1.3912	-----	-----
EVALUATION X PERIOD DYNAMICS	5	3.6564	0.7313	-----	-----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	1.6641	0.3328	-----	-----
Within	240	522.9602	2.1790		
Total		556.9525			

TABLE L

ANALYSIS OF VARIANCE FOR THE OUT-OF-CLASS PRODUCT ON
THE DEPENDENT VARIABLE: CRAFTSMANSHIP
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	0.8522	0.8522	----	----
EVALUATION: Teacher/Student	1	0.6012	0.6012	----	----
MOTIVATION X EVALUATION	1	83.1940	83.1940	31.64	.001
PERIOD DYNAMICS	5	52.1751	10.4350	3.89	.01
MOTIVATION X PERIOD DYNAMICS	5	6.0908	1.2182	----	----
EVALUATION X PERIOD DYNAMICS	5	16.8872	3.3774	----	----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	3.7626	0.7525	----	----
Within	240	644.5385	2.6856		
Total		808.1016			

TABLE LI

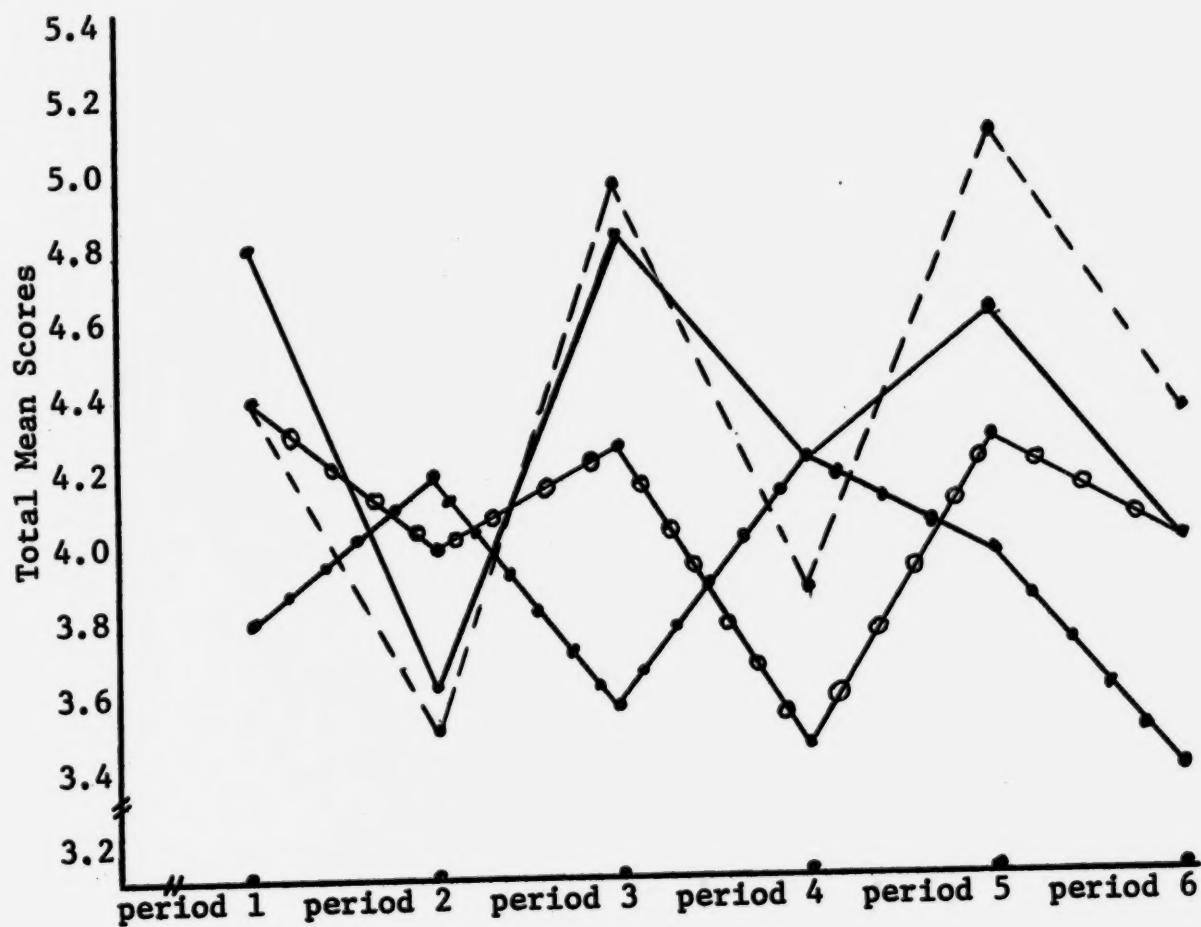
ANALYSIS OF VARIANCE FOR THE OUT-OF-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	2.0739	2.0739	-----	-----
EVALUATION: Teacher/Student	1	0.0254	0.0254	-----	-----
MOTIVATION X EVALUATION	1	44.6741	44.6741	20.26	.001
PERIOD DYNAMICS	5	22.2332	4.4466	-----	-----
MOTIVATION X PERIOD DYNAMICS	5	4.1635	0.8327	-----	-----
EVALUATION X PERIOD DYNAMICS	5	7.1248	1.4250	-----	-----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	4.5627	0.9125	-----	-----
Within	240	543.4476	2.2644		
Total		628.3052			

TABLE LII

ANALYSIS OF VARIANCE FOR THE OUT-OF-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: TOTAL VARIABLE SCORES
N=264

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability
MOTIVATION: Teacher/Student	1	0.3939	0.3939	-----	-----
EVALUATION: Teacher/Student	1	0.1103	0.1103	-----	-----
MOTIVATION X EVALUATION	1	44.6742	44.6742	20.87	.001
PERIOD DYNAMICS	5	23.2833	4.6567	-----	-----
MOTIVATION X PERIOD DYNAMICS	5	5.5036	1.1007	-----	-----
EVALUATION X PERIOD DYNAMICS	5	6.6544	1.3309	-----	-----
MOTIVATION X EVALUATION X PERIOD DYNAMICS	5	1.8379	0.3676	-----	-----
Within	240	529.9568	2.2082		
Total		612.4144			



Teacher Motivation-Teacher Evaluation
 Teacher Motivation-Student Evaluation
 Student Motivation-Teacher Evaluation
 Student Motivation-Student Evaluation

FIGURE 13

JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR THE
 SIX PERIODS OF IN-CLASS PROCESS ON THE
 DEPENDENT VARIABLE: ORIGINALITY

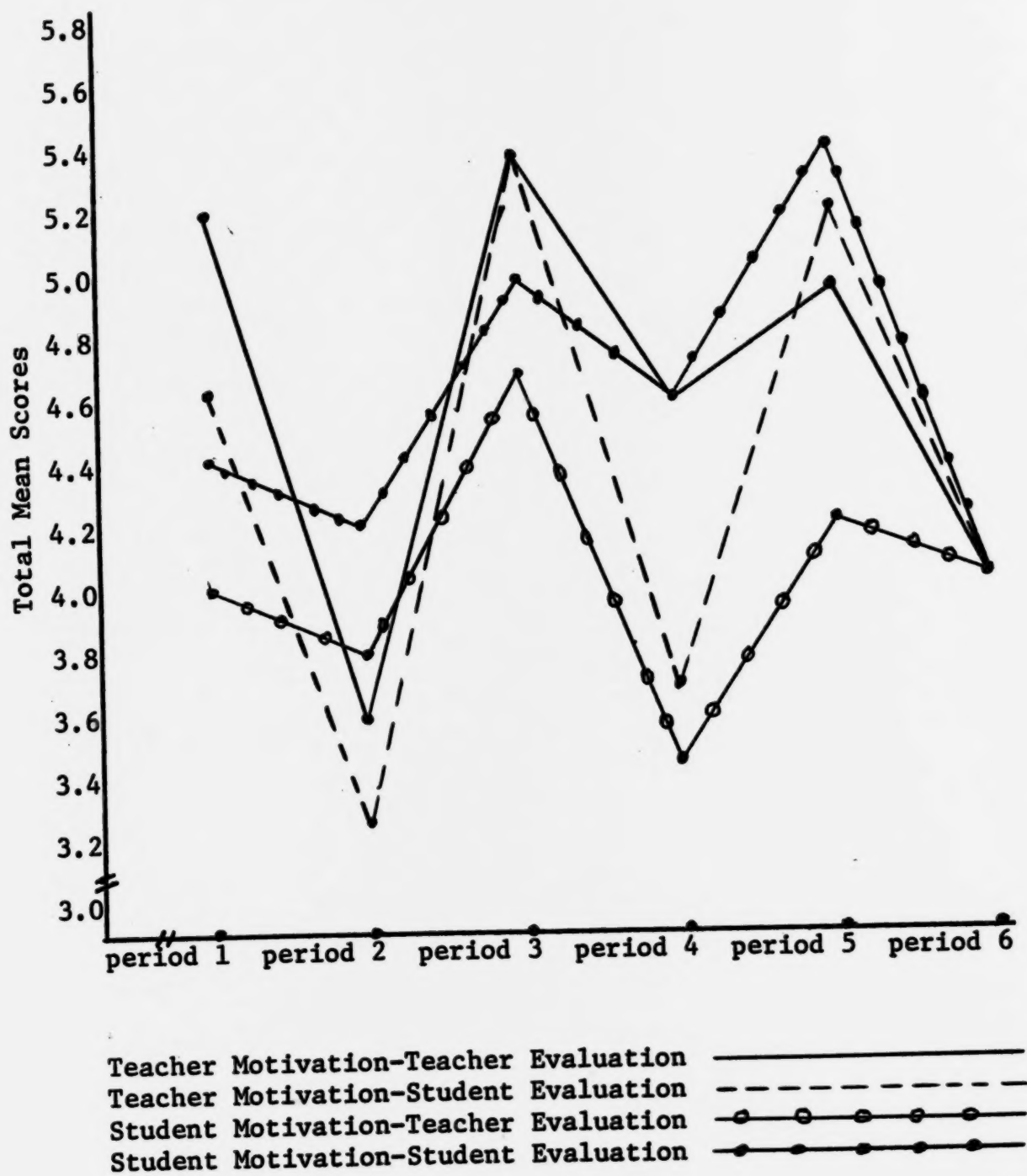
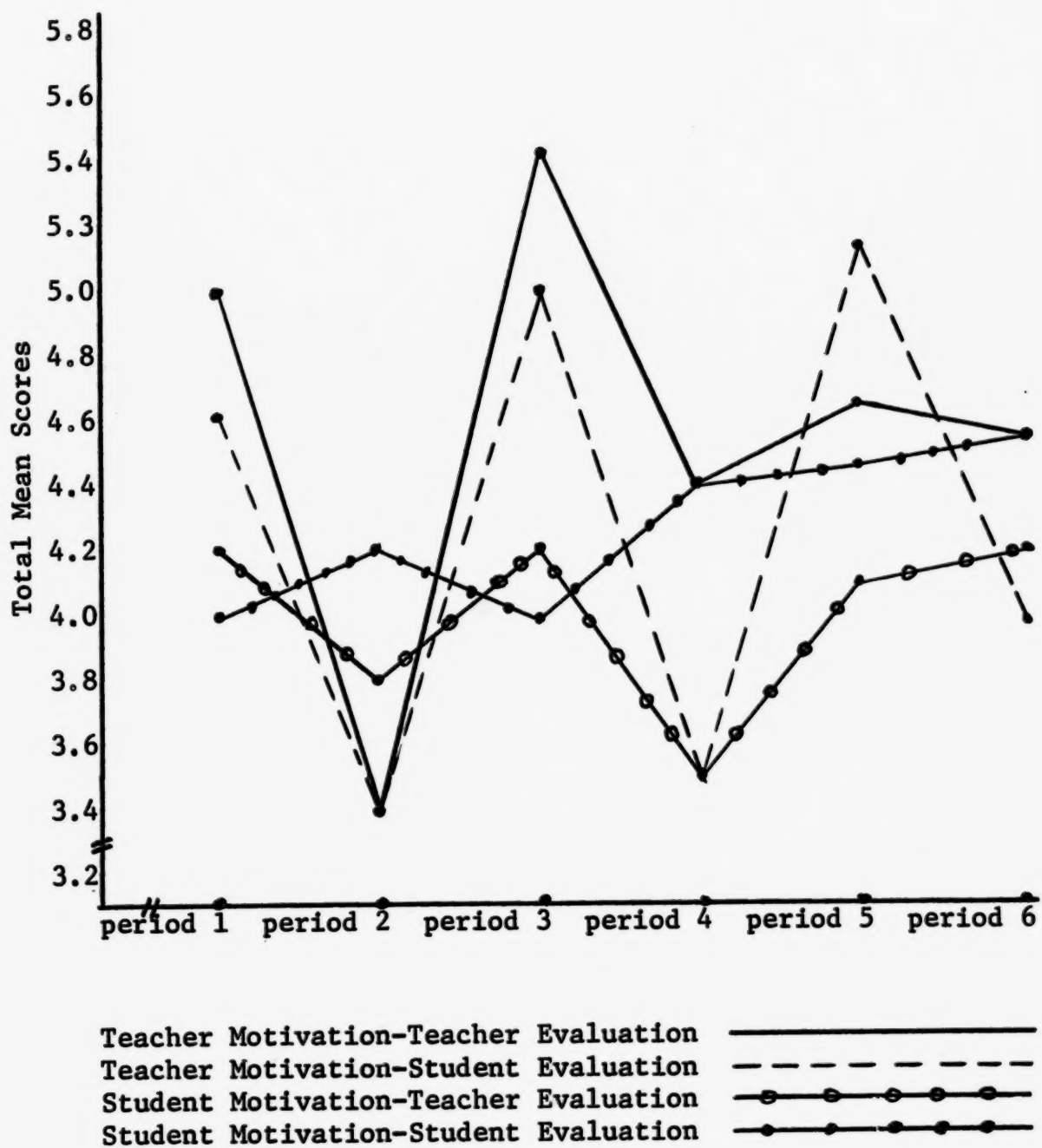


FIGURE 14

JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR
THE SIX PERIODS OF IN-CLASS PROCESS ON THE
DEPENDENT VARIABLE: CRAFTSMANSHIP



*.05 level of significance

FIGURE 15

JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR THE SIX PERIODS OF IN-CLASS PROCESS ON THE DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE

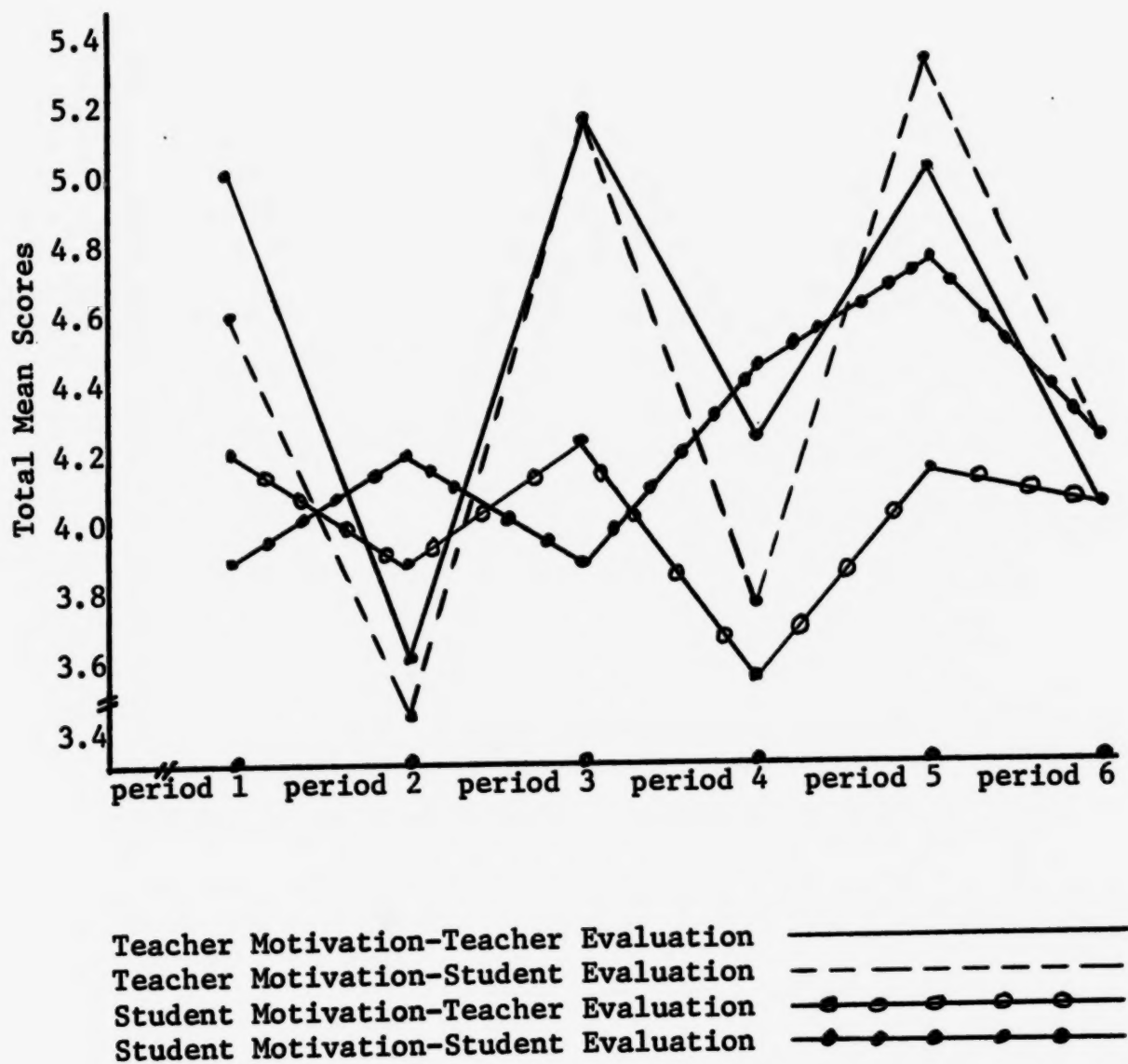
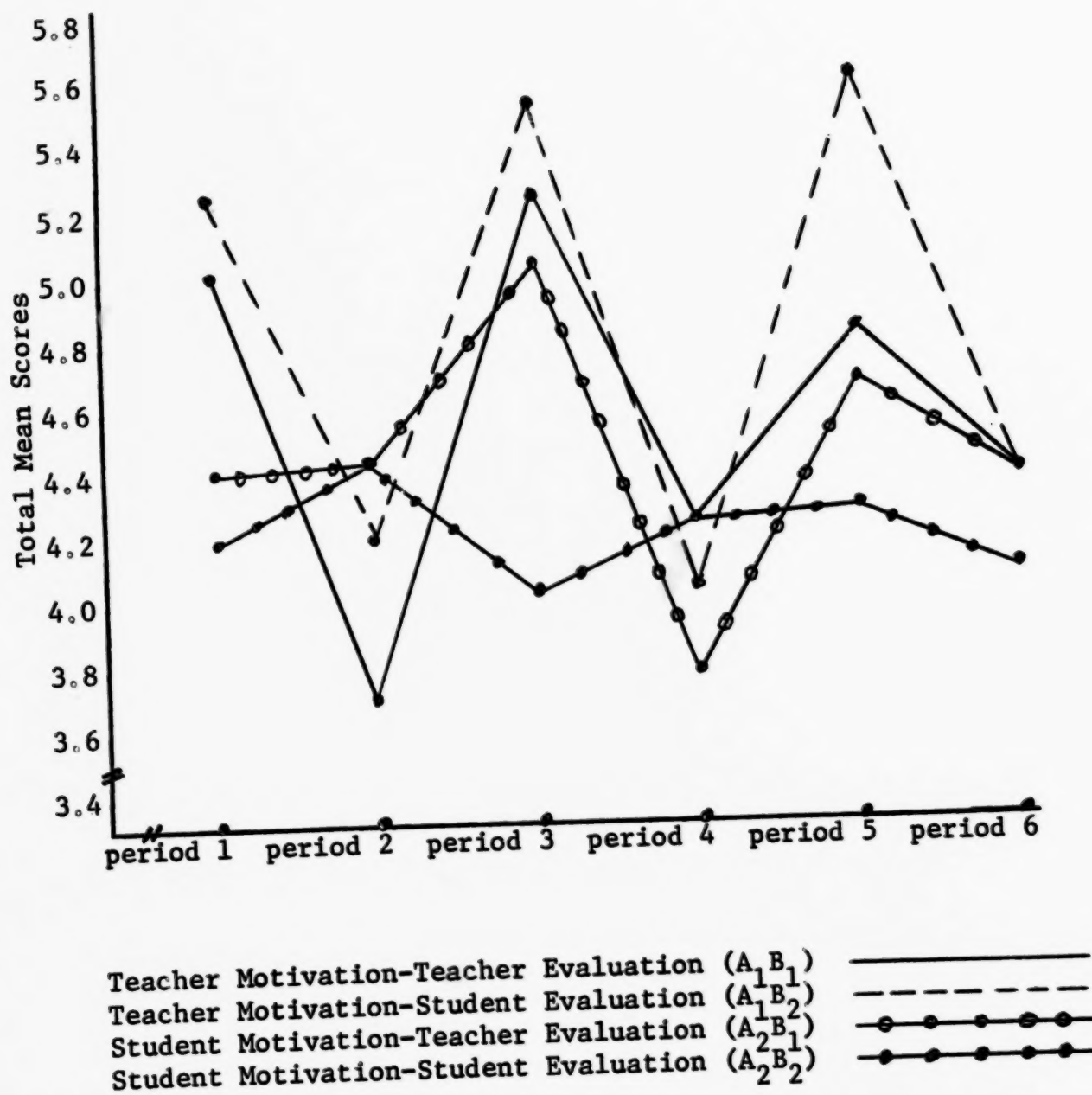


FIGURE 16

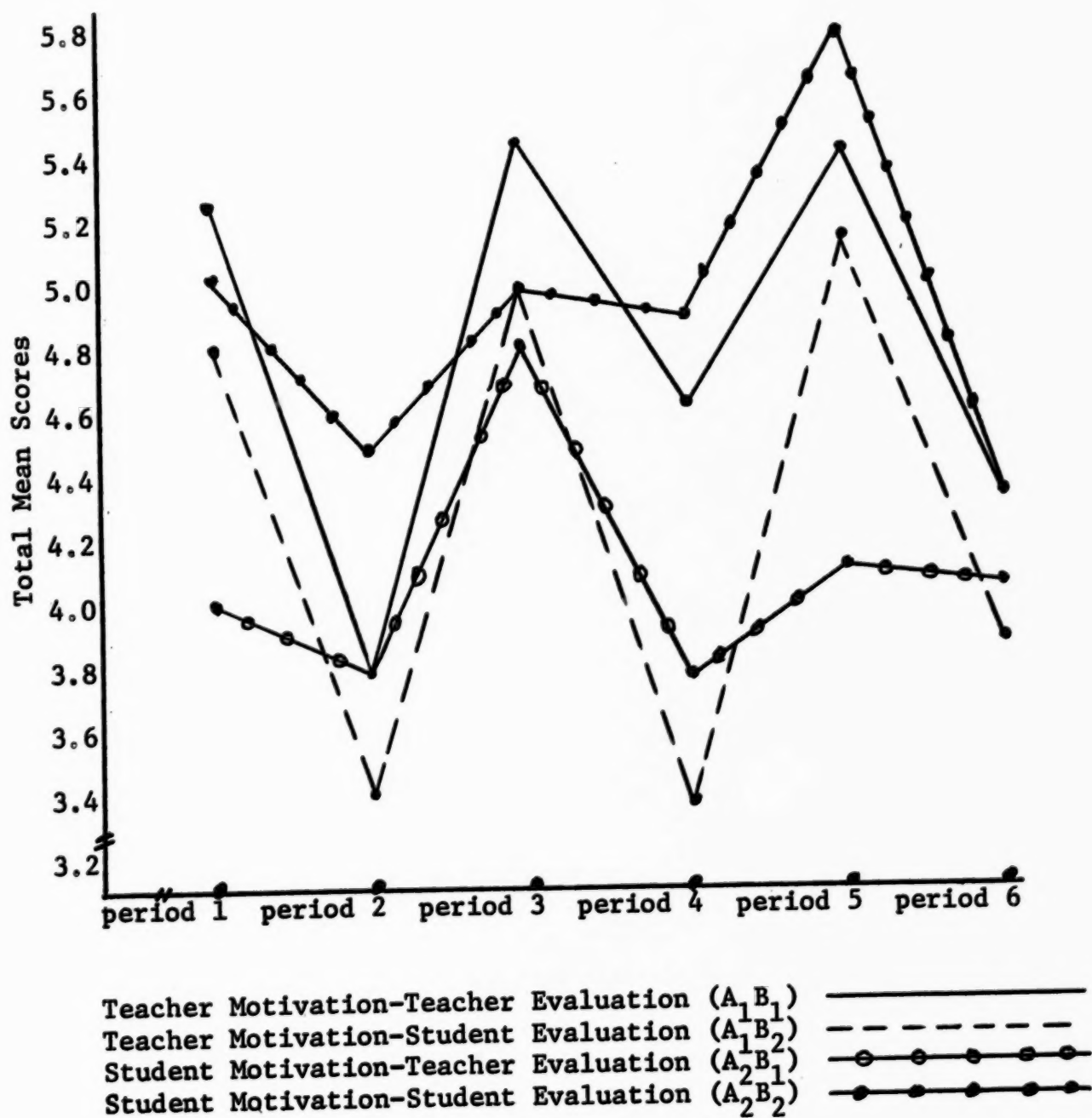
JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR THE SIX PERIODS OF IN-CLASS PROCESS ON THE DEPENDENT VARIABLE: TOTAL VARIABLE SCORES



*.05 level of significance

FIGURE 17

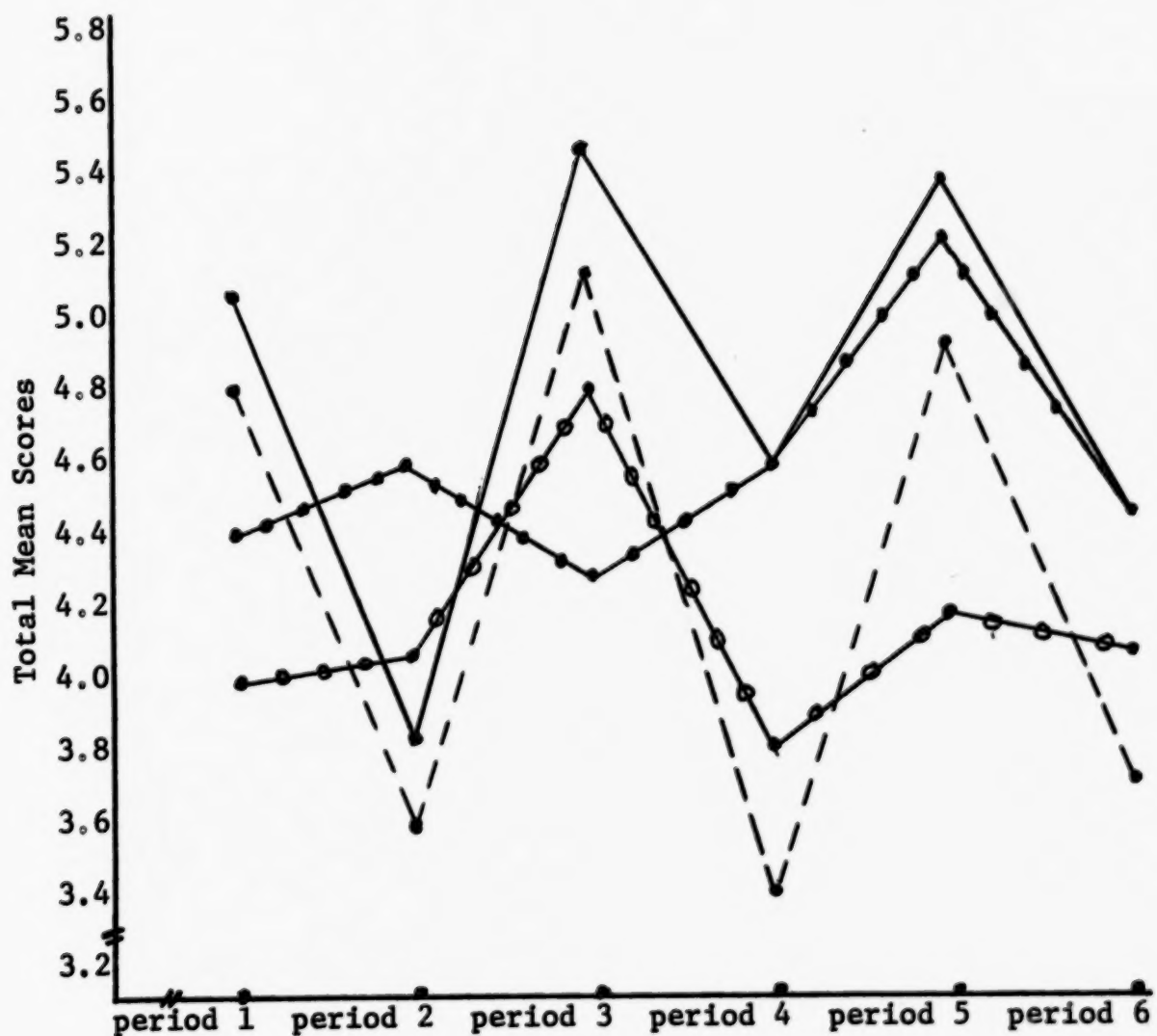
JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR THE SIX PERIODS OF IN-CLASS PRODUCT ON THE DEPENDENT VARIABLE: ORIGINALITY



*.05 level of significance
 **.01 level of significance

FIGURE 18

JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR THE
 SIX PERIODS OF IN-CLASS PRODUCT ON THE
 DEPENDENT VARIABLE: CRAFTSMANSHIP



Teacher Motivation-Teacher Evaluation (A₁B₁) —————
 Teacher Motivation-Student Evaluation (A₁B₂) - - - - -
 Student Motivation-Teacher Evaluation (A₂B₁) —●—●—●—●—●—
 Student Motivation-Student Evaluation (A₂B₂) —●—●—●—●—●—

** .01 level of significance

FIGURE 19

JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR THE
 SIX PERIODS OF IN-CLASS PRODUCT ON THE DEPENDENT
 VARIABLE: OVER-ALL AESTHETIC VALUE

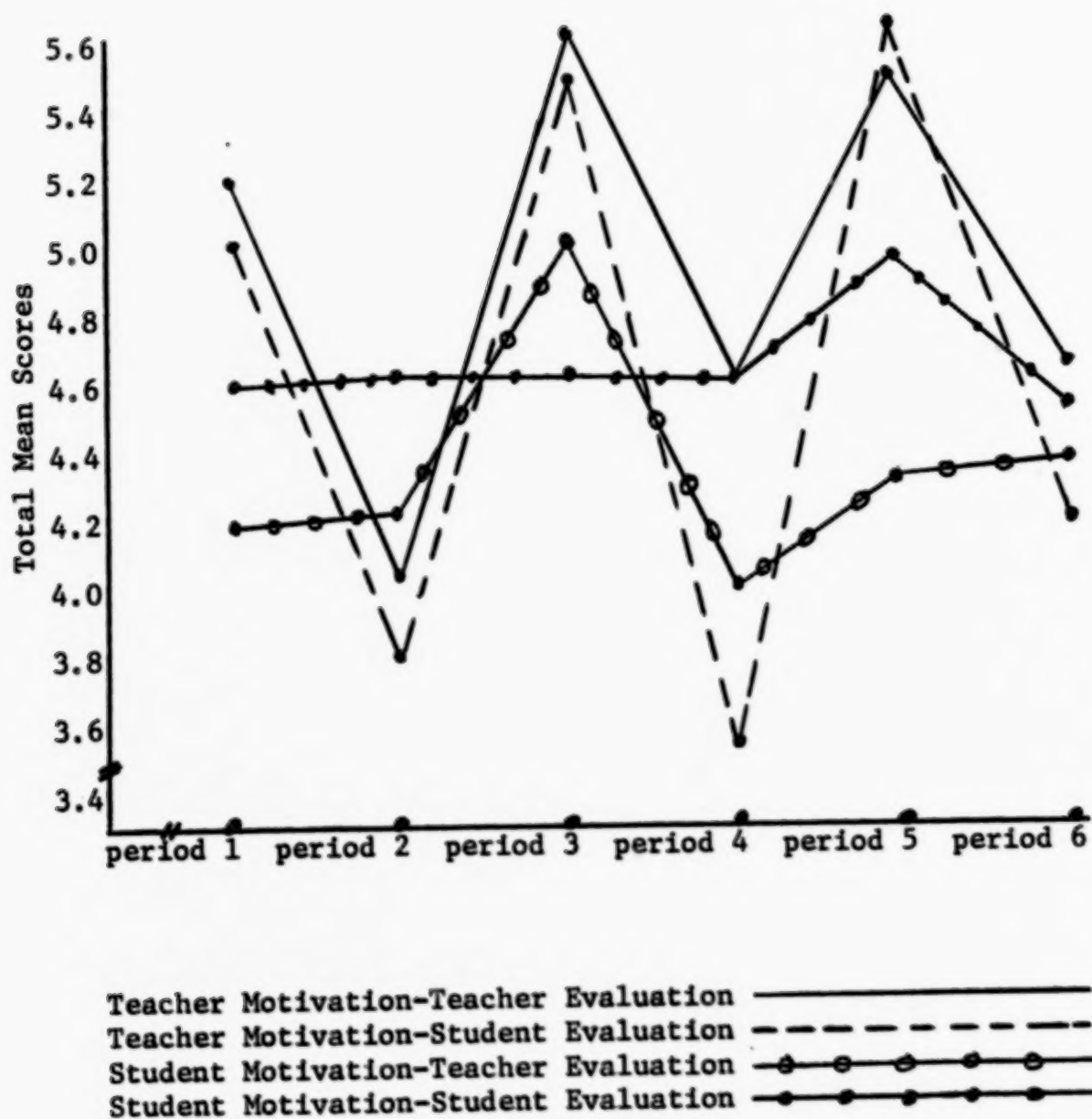


FIGURE 20

JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR THE
SIX PERIODS OF IN-CLASS PRODUCT ON THE DEPENDENT
VARIABLE: TOTAL VARIABLE SCORES

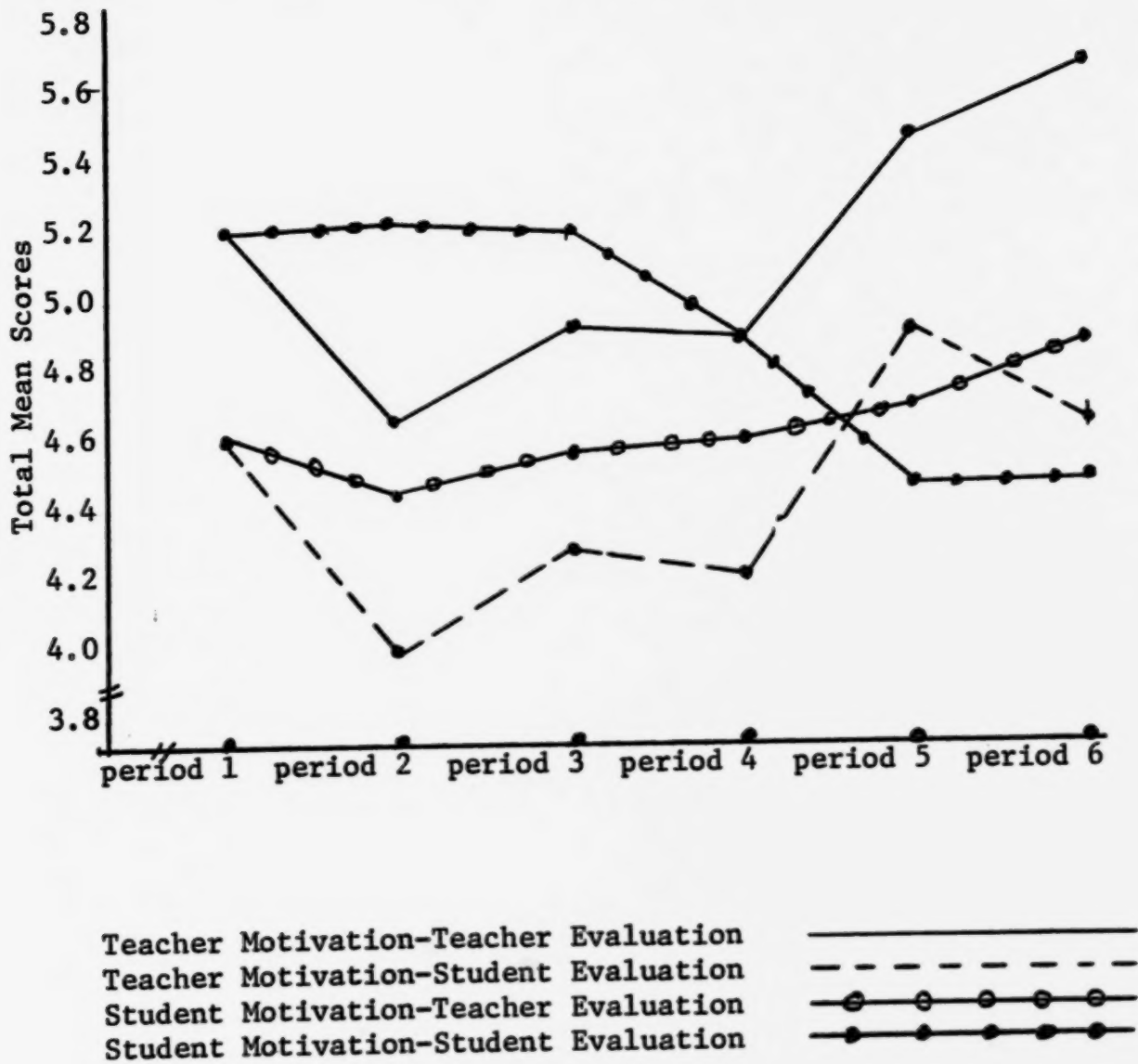
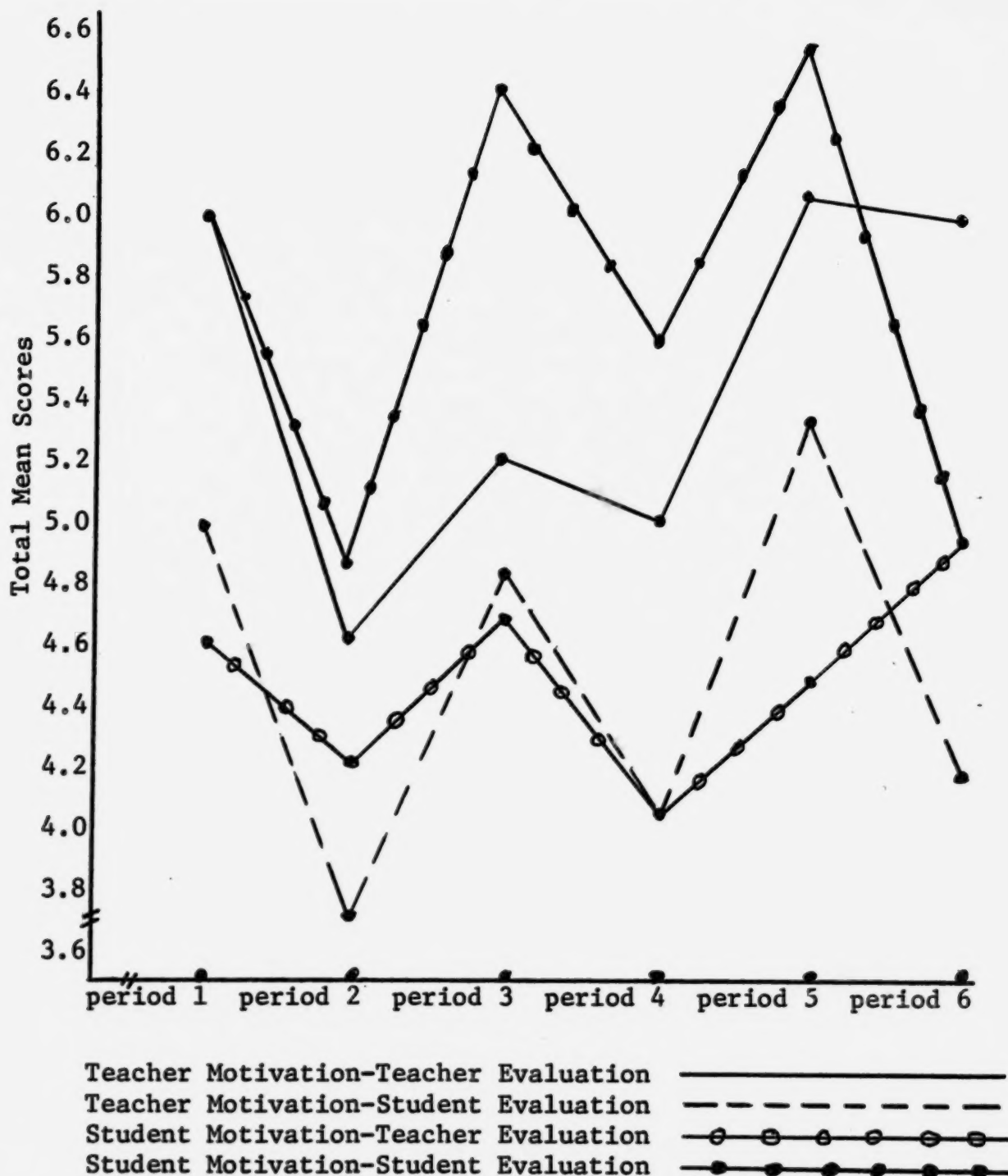


FIGURE 21

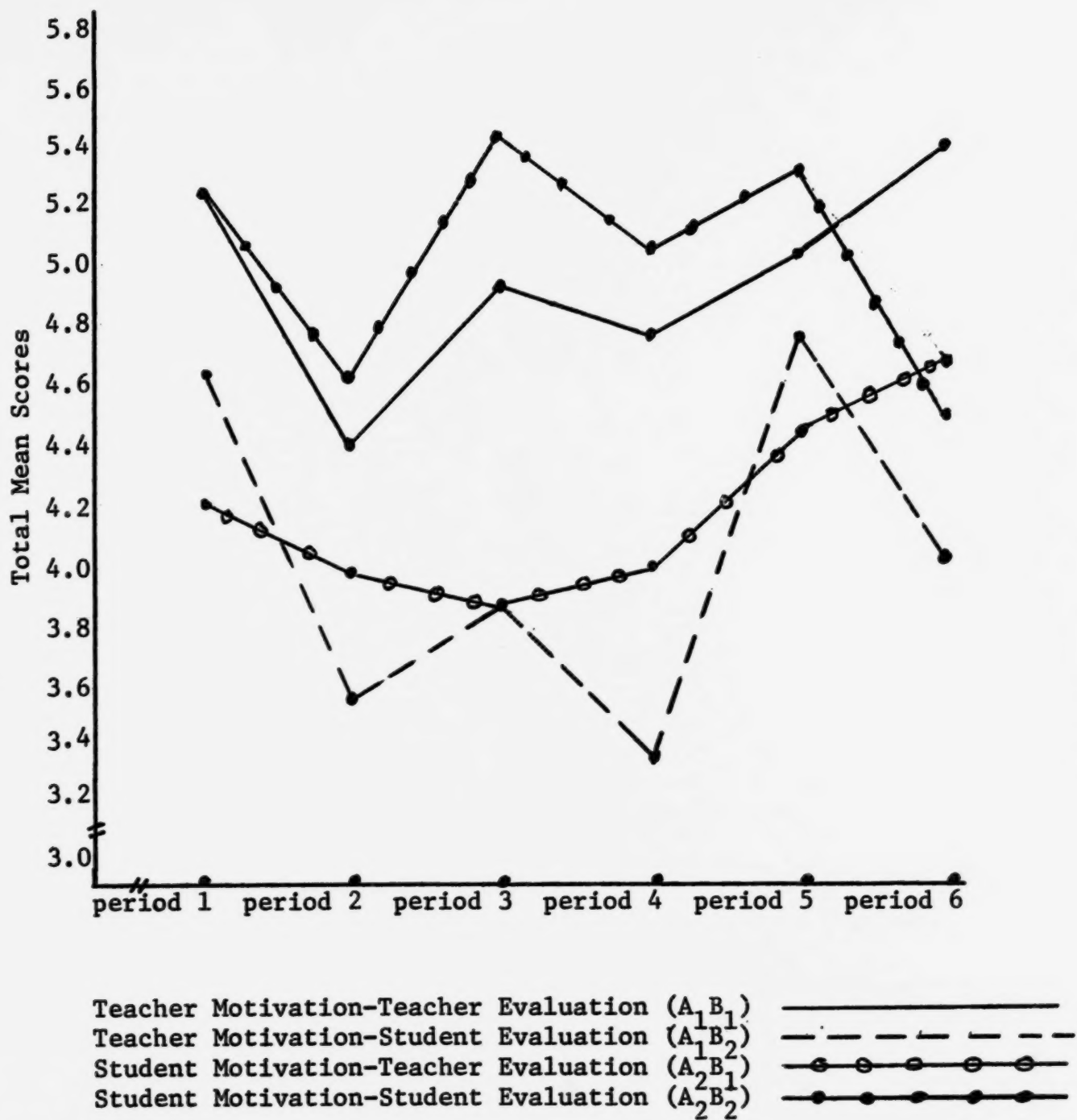
JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR THE
SIX PERIODS OF OUT-OF-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: ORIGINALITY



*.05 level of significance
 **.01 level of significance

FIGURE 22

JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR THE
 SIX PERIODS OF OUT-OF-CLASS PRODUCT ON THE
 DEPENDENT VARIABLE: CRAFTSMANSHIP



*.05 level of significance
 **.01 level of significance

FIGURE 23

JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR
 THE SIX PERIODS OF OUT-OF-CLASS PRODUCT ON THE
 DEPENDENT VARIABLE: OVER-ALL AESTHETIC VALUE

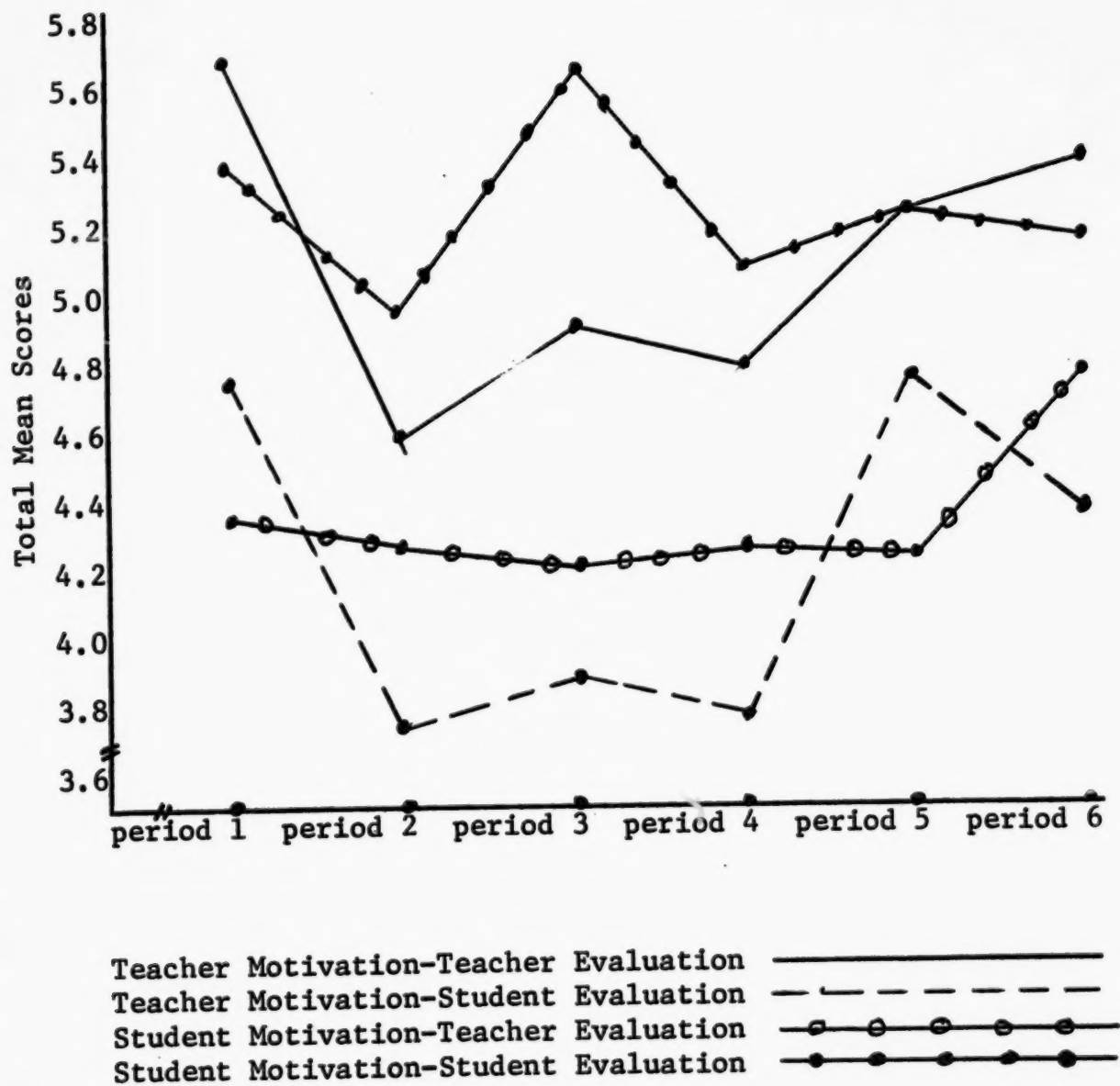


FIGURE 24

JUDGED SCORES OF THE FOUR TEACHING TREATMENTS FOR
THE SIX PERIODS OF OUT-OF-CLASS PRODUCT ON THE
DEPENDENT VARIABLE: TOTAL VARIABLE SCORES

TABLE LIII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
 SCORES FOR PERIOD ONE (IN-CLASS PROCESS)
 DEPENDENT VARIABLE: ORIGINALITY
 N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	3.723	3.723	-----	-----	-----
B	1	2.650	2.650	-----	-----	-----
AB	1	0.232	0.232	-----	-----	-----
Within Groups	40	72.013	1.800	-----	-----	-----

TABLE LIV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
 SCORES FOR PERIOD ONE (IN-CLASS PROCESS)
 DEPENDENT VARIABLE: CRAFTSMANSHIP
 N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	4.454	4.454	-----	-----	-----
B	1	0.363	0.363	-----	-----	-----
AB	1	2.094	2.094	-----	-----	-----
Within Groups	40	86.333	2.158	-----	-----	-----

TABLE LV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD ONE (IN-CLASS PROCESS) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	6.568	6.568	-----	-----	-----
B	1	0.990	0.990	-----	-----	-----
AB	1	0.073	0.073	-----	-----	-----
Within Groups	40	96.064	2.401	-----	-----	-----

TABLE LVI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD TWO (IN-CLASS PROCESS)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	2.850	2.850	-----	-----	-----
B	1	0.130	0.130	-----	-----	-----
AB	1	0.363	0.363	-----	-----	-----
Within Groups	40	41.330	1.033	-----	-----	-----

TABLE LVII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD TWO (IN-CLASS PROCESS)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	2.750	2.750	-----	-----	-----
B	1	0.110	0.110	-----	-----	-----
AB	1	1.680	1.680	-----	-----	-----
Within Groups	40	46.225	1.156	-----	-----	-----

TABLE LVIII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD TWO (IN-CLASS PROCESS) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	3.723	3.723	-----	-----	-----
B	1	0.363	0.363	-----	-----	-----
AB	1	0.614	0.614	-----	-----	-----
Within Groups	40	46.726	1.168	-----	-----	-----

TABLE LIX

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD THREE (IN-CLASS PROCESS)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	11.200	11.200	7.27	.05	$A_1 > A_2$
B	1	1.528	1.528	-----	-----	-----
AB	1	2.182	2.182	-----	-----	-----
Within Groups	40	61.737	1.543	-----	-----	-----

TABLE LX

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES OF PERIOD THREE (IN-CLASS PROCESS)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	7.363	7.363	4.75	.05	$A_1 > A_2$
B	1	0.000	0.000	-----	-----	-----
AB	1	0.090	0.090	-----	-----	-----
Within Groups	40	62.006	1.550	-----	-----	-----

TABLE LXI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD THREE (IN-CLASS PROCESS) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE

N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	16.814	16.814	9.50	.01	$A_1 > A_2$
B	1	0.440	0.440	-----	-----	-----
AB	1	0.000	0.000	-----	-----	-----
Within Groups	40	71.112	1.777	-----	-----	-----

TABLE LXII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD FOUR (IN-CLASS PROCESS)
DEPENDENT VARIABLE: ORIGINALITY

N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.294	0.294	-----	-----	-----
B	1	0.440	0.440	-----	-----	-----
AB	1	1.454	1.454	-----	-----	-----
Within Groups	40	72.231	1.857	-----	-----	-----

TABLE LXIII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD FOUR (IN-CLASS PROCESS)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.003	0.003	-----	-----	-----
B	1	0.178	0.178	-----	-----	-----
AB	1	8.032	8.032	-----	-----	-----
Within Groups	40	80.260	2.006	-----	-----	-----

TABLE LXIV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD FOUR (IN-CLASS PROCESS) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.032	0.032	-----	-----	-----
B	1	0.130	0.130	-----	-----	-----
AB	1	9.832	9.832	4.59	.05	$A_{2B_2} > A_{1B_1}$ $A_{1B_2} > A_{2B_1}$
Within Groups	40	80.552	2.013	-----	-----	-----

TABLE LXV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
 SCORES FOR PERIOD FIVE (IN-CLASS PROCESS)
 DEPENDENT VARIABLE: ORIGINALITY
 N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	6.112	6.112	-----	-----	-----
B	1	0.014	0.014	-----	-----	-----
AB	1	3.058	3.058	-----	-----	-----
Within Groups	40	66.158	1.404	-----	-----	-----

TABLE LXVI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
 SCORES FOR PERIOD FIVE (IN-CLASS PROCESS)
 DEPENDENT VARIABLE: CRAFTSMANSHIP
 N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.873	0.873	-----	-----	-----
B	1	4.582	4.582	-----	-----	-----
AB	1	3.164	3.164	-----	-----	-----
Within Groups	40	78.537	1.963	-----	-----	-----

TABLE LXVII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD FIVE (IN-CLASS PROCESS) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	4.582	4.582	-----	-----	-----
B	1	2.364	2.364	-----	-----	-----
AB	1	0.044	0.044	-----	-----	-----
Within Groups	40	81.802	2.045	-----	-----	-----

TABLE LXVIII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD SIX (IN-CLASS PROCESS)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.712	0.712	-----	-----	-----
B	1	0.130	0.130	-----	-----	-----
AB	1	2.850	2.850	-----	-----	-----
Within Groups	40	81.781	2.044	-----	-----	-----

TABLE LXIX

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD SIX (IN-CLASS PROCESS)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.008	0.008	-----	-----	-----
B	1	0.000	0.000	-----	-----	-----
AB	1	0.110	0.110	-----	-----	-----
Within Groups	40	111.737	2.793	-----	-----	-----

TABLE LXX

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD SIX (IN-CLASS PROCESS) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.153	0.153	-----	-----	-----
B	1	0.110	0.110	-----	-----	-----
AB	1	0.073	0.073	-----	-----	-----
Within Groups	40	96.181	2.404	-----	-----	-----

TABLE LXXI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD ONE (IN-CLASS PRODUCT)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	7.120	7.120	6.09	.05	$A_1 > A_2$
B	1	0.043	0.043	-----	-----	-----
AB	1	0.431	0.431	-----	-----	-----
Within Groups	40	47.125	1.178	-----	-----	-----

TABLE LXXII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD ONE (IN-CLASS PRODUCT)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	2.534	2.534	-----	-----	-----
B	1	0.349	0.349	-----	-----	-----
AB	1	4.166	4.166	-----	-----	-----
Within Groups	40	67.422	1.685	-----	-----	-----

TABLE LXXIII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD ONE (IN-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	5.876	5.876	4.11	.05	$A_1 > A_2$
B	1	0.062	0.062	-----	-----	-----
AB	1	1.075	1.075	-----	-----	-----
Within Groups	40	57.841	1.446	-----	-----	-----

TABLE LXXIV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD TWO (IN-CLASS PRODUCT)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	1.480	1.480	-----	-----	-----
B	1	0.474	0.474	-----	-----	-----
AB	1	0.283	0.283	-----	-----	-----
Within Groups	40	34.731	0.868	-----	-----	-----

TABLE LXXV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD TWO (IN CLASS PRODUCT)

DEPENDENT VARIABLE: CRAFTSMANSHIP

N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	3.608	3.608	-----	-----	-----
B	1	0.363	0.363	-----	-----	-----
AB	1	2.336	2.336	-----	-----	-----
Within Groups	40	50.369	1.259	-----	-----	-----

TABLE LXXVI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD TWO (IN CLASS PRODUCT) DEPENDENT

VARIABLE: OVER-ALL AESTHETIC VALUE

N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	2.979	2.979	-----	-----	-----
B	1	0.552	0.552	-----	-----	-----
AB	1	1.708	1.708	-----	-----	-----
Within Groups	40	44.502	1.112	-----	-----	-----

TABLE LXXVII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD THREE (IN-CLASS PRODUCT)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	8.847	8.847	8.26	.01	$A_1 > A_2$
B	1	0.602	0.602	4.15	.05	$A_1B_2 > A_1B_1$ $A_2B_1 > A_2B_2$
AB	1	4.435	4.435	-----	-----	-----
Within Groups	40	41.611	1.402	-----	-----	-----

TABLE LXXVIII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD THREE (IN-CLASS PRODUCT)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	1.784	1.784	-----	-----	-----
B	1	0.201	0.201	-----	-----	-----
AB	1	0.506	0.506	-----	-----	-----
Within Groups	40	56.686	1.417	-----	-----	-----

TABLE LXXIX

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD THREE (IN-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	8.919	8.919	6.42	.05	$A_1 > A_2$
B	1	1.944	1.944	-----	-----	-----
AB	1	0.035	0.035	-----	-----	-----
Within Groups	40	55.655	1.391	-----	-----	-----

TABLE LXXX

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD FOUR (IN-CLASS PRODUCT)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.028	0.028	-----	-----	-----
B	1	0.031	0.031	-----	-----	-----
AB	1	1.944	1.944	-----	-----	-----
Within Groups	40	58.316	1.457	-----	-----	-----

TABLE LXXXI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD FOUR (IN-CLASS PRODUCT)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.517	0.517	-----	-----	-----
B	1	0.000	0.000	-----	-----	-----
AB	1	13.058	13.058	-----	-----	A ₂ B ₂ > A ₁ B ₁ A ₂ B ₁ > A ₁ B ₂
Within Groups	40	66.321	1.658	-----	-----	-----

TABLE LXXXII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD FOUR (IN-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.528	0.528	-----	-----	-----
B	1	0.432	0.432	-----	-----	-----
AB	1	11.020	11.020	7.53	.01	A ₂ B ₂ > A ₁ B ₁ A ₂ B ₁ > A ₁ B ₂
Within Groups	40	58.001	1.450	-----	-----	-----

TABLE LXXXIII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD FIVE (IN-CLASS PRODUCT)

DEPENDENT VARIABLE: ORIGINALITY

N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	5.566	5.566	6.12	.05	$A_1 > A_2$
B	1	0.690	0.690	-----	-----	-----
AB	1	2.359	2.359	-----	-----	-----
Within Groups	40	36.579	0.914	-----	-----	-----

TABLE LXXXIV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGE
SCORES FOR PERIOD FIVE (IN-CLASS PRODUCT)

DEPENDENT VARIABLE: CRAFTSMANSHIP

N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	1.145	1.145	-----	-----	-----
B	1	4.778	4.778	-----	-----	-----
AB	1	7.998	7.998	4.56	.05	$A_2B_2 > A_1B_1$
Within Groups	40	69.926	1.748	-----	-----	$A_1B_2 > A_2B_1$

TABLE LXXXV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD FIVE (IN-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	5.120	5.120	-----	-----	-----
B	1	0.136	0.136	-----	-----	-----
AB	1	1.902	1.902	-----	-----	-----
Within Groups	40	55.436	1.385	-----	-----	-----

TABLE LXXXVI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD SIX (IN-CLASS PRODUCT)
DEPENDENT VARIABLES: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.302	0.302	-----	-----	-----
B	1	0.316	0.316	-----	-----	-----
AB	1	0.099	0.099	-----	-----	-----
Within Groups	40	55.289	1.382	-----	-----	-----

TABLE LXXXVII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD SIX (IN-CLASS PRODUCT)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.092	0.092	-----	-----	-----
B	1	0.028	0.028	-----	-----	-----
AB	1	1.389	1.389	-----	-----	-----
Within Groups	40	84.993	2.124	-----	-----	-----

TABLE LXXXVIII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD SIX (IN-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.751	0.751	-----	-----	-----
B	1	0.095	0.095	-----	-----	-----
AB	1	2.425	2.425	-----	-----	-----
Within Groups	40	71.259	1.781	-----	-----	-----

TABLE LXXXIX

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
 SCORES FOR PERIOD ONE (OUT-OF-CLASS PRODUCT)
 DEPENDENT VARIABLE: ORIGINALITY
 N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.153	0.153	-----	-----	-----
B	1	0.008	0.008	-----	-----	-----
AB	1	3.164	3.164	-----	-----	-----
Within Groups	40	88.071	2.201	-----	-----	-----

TABLE XC

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
 SCORES FOR PERIOD ONE (OUT-OF-CLASS PRODUCT)
 DEPENDENT VARIABLE: CRAFTSMANSHIP
 N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.232	0.232	-----	-----	-----
B	1	0.712	0.712	-----	-----	-----
AB	1	17.312	17.312	7.52	.01	A ₂ B ₂ > A ₁ B ₁ A ₁ B ₂ > A ₂ B ₁
Within Groups	40	92.210	2.305	-----	-----	-----

TABLE XCI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD ONE (OUT-OF-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.480	0.480	-----	-----	-----
B	1	0.262	0.262	-----	-----	-----
AB	1	7.528	7.528	-----	-----	-----
Within Groups	40	84.238	2.105	-----	-----	-----

TABLE XCII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD TWO (OUT-OF-CLASS PRODUCT)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	2.021	2.021	-----	-----	-----
B	1	0.021	0.021	-----	-----	-----
AB	1	3.823	3.823	-----	-----	-----
Within Groups	40	93.125	2.328	-----	-----	-----

TABLE XCIII
ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD TWO (OUT-OF-CLASS PRODUCT)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	1.603	1.603	-----	-----	-----
B	1	0.232	0.232	-----	-----	-----
AB	1	6.414	6.414	-----	-----	-----
Within Groups	40	89.315	2.232	-----	-----	-----

TABLE XCIV
ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD TWO (OUT-OF-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	1.244	1.244	-----	-----	-----
B	1	0.262	0.262	-----	-----	-----
AB	1	3.840	3.840	-----	-----	-----
Within Groups	40	75.788	1.894	-----	-----	-----

TABLE XCV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD THREE (OUT-OF-CLASS PRODUCT)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.204	0.204	-----	-----	-----
B	1	0.008	0.008	-----	-----	-----
AB	1	4.582	4.582	-----	-----	-----
Within Groups	40	80.638	2.015	-----	-----	-----

TABLE XCVI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD THREE (OUT-OF-CLASS PRODUCT)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	2.650	2.650	-----	-----	-----
B	1	3.494	3.494	-----	-----	-----
AB	1	17.818	17.818	6.75	.025	A ₂ B ₂ > A ₁ B ₁ A ₁ B ₂ > A ₂ B ₁
Within Groups	1	105.711	2.642	-----	-----	-----

TABLE XCVII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD THREE (OUT-OF-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	1.244	1.244	-----	-----	-----
B	1	1.113	1.113	-----	-----	-----
AB	1	19.113	19.113	9.15	.01	$A_2B_2 > A_1B_1$ $A_2B_1 > A_1B_2$
Within Groups	40	83.802	2.095	-----	-----	-----

TABLE XCVIII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD FOUR (OUT-OF-CLASS PRODUCT)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.523	0.523	-----	-----	-----
B	1	0.532	0.532	-----	-----	-----
AB	1	1.923	1.923	-----	-----	-----
Within Groups	40	96.988	2.424	-----	-----	-----

TABLE XCIX

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD FOUR (OUT-OF-CLASS PRODUCT)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.294	0.294	-----	-----	-----
B	1	0.130	0.130	-----	-----	-----
AB	1	16.323	16.323	5.56	.025	A ₂ B ₂ > A ₁ B ₁ A ₂ B ₁ > A ₁ B ₂
Within Groups	40	117.155	2.928	-----	-----	-----

TABLE C

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD FOUR (OUT-OF-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	2.553	2.553	-----	-----	-----
B	1	0.328	0.328	-----	-----	-----
AB	1	12.873	12.873	5.23	.05	A ₂ B ₂ > A ₁ B ₁ A ₂ B ₁ > A ₁ B ₂
Within Groups	40	98.336	2.458	-----	-----	-----

TABLE CI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD FIVE (OUT-OF-CLASS PRODUCT)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	2.458	2.458	-----	-----	-----
B	1	0.440	0.440	-----	-----	-----
AB	1	0.363	0.363	-----	-----	-----
Within Groups	40	67.846	1.696	-----	-----	-----

TABLE CII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD FIVE (OUT-OF-CLASS PRODUCT)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	1.760	1.760	-----	-----	-----
B	1	4.712	4.712	-----	-----	-----
AB	1	21.560	21.560	8.42	.01	A ₂ B ₂ > A ₁ B ₁ A ₁ B ₂ > A ₂ B ₁
Within Groups	40	102.276	2.556	-----	-----	-----

TABLE CIII

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD FIVE (OUT-OF-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.044	0.044	-----	-----	-----
B	1	1.840	1.840	-----	-----	-----
AB	1	3.841	3.841	-----	-----	-----
Within Groups	40	89.199	2.229	-----	-----	-----

TABLE CIV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD SIX (OUT-OF-CLASS PRODUCT)
DEPENDENT VARIABLE: ORIGINALITY
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	1.680	1.680	-----	-----	-----
B	1	4.582	4.582	-----	-----	-----
AB	1	1.244	1.244	-----	-----	-----
Within Groups	40	96.362	2.409	-----	-----	-----

TABLE CV

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED
SCORES FOR PERIOD SIX (OUT-OF-CLASS PRODUCT)
DEPENDENT VARIABLE: CRAFTSMANSHIP
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.400	0.400	-----	-----	-----
B	1	8.204	8.204	-----	-----	-----
AB	1	7.528	7.528	-----	-----	-----
Within Group	40	136.064	3.451	-----	-----	-----

TABLE CVI

ANALYSIS OF VARIANCE OF THE TOTAL EXTERNAL JUDGED SCORES
FOR PERIOD SIX (OUT-OF-CLASS PRODUCT) DEPENDENT
VARIABLE: OVER-ALL AESTHETIC VALUE
N=44

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-Ratio	Probability	Direction
A	1	0.073	0.073	-----	-----	-----
B	1	4.328	4.328	-----	-----	-----
AB	1	3.382	3.382	-----	-----	-----
Within Groups	40	107.511	2.687	-----	-----	-----